

1637

INTERNATIONAL HARVESTER GENERAL LINE CATALOG

1949

Farm Operating Equipment



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McCORMICK

Farm Operating Equipment

General Line Catalog
GLD



INTERNATIONAL HARVESTER COMPANY

180 NORTH MICHIGAN AVE. • CHICAGO 1, ILLINOIS, U.S.A.

PRINTED IN UNITED STATES OF AMERICA



THIS EMBLEM means "Product of International Harvester." It is a symbol of service to farmers everywhere — the mark of *quality* and *experience* which identifies every farm machine built by International Harvester. These machines are the world's standard, esteemed for their modern design and intrinsic value to the user. IH farm machines have led the way to easier farming and better living. They are the buying choice of progressive-minded farmers everywhere.

- This catalog describes and illustrates the current line of products built by International Harvester, excepting motor trucks and strictly industrial power equipment. Specifications on each machine are included, as well as lists of regular and special equipment. The principal features of the important machines are prominently displayed so that they may be reviewed, when the need arises, without having to read through lengthy paragraphs. Detailed information on each machine and its component parts has been kept brief and to the point.
- The catalog is divided into sections according to machine groups. Each section has a table of contents appearing on the initial page and covering the machines shown in that particular section. In addition, there is a complete, alphabetically arranged and cross-referenced index in the front of the catalog. This makes it easy to locate any machine or product in which the reader is interested.
- Every effort has been made to provide a catalog which gives all the essential, factual information in such a way that it may be quickly found and correctly interpreted.

The products described and illustrated in this catalog are sold by the International Harvester dealer in your community.

All illustrations and descriptive matter in this publication apply to International Harvester products sold under McCormick, McCormick-Deering, International, or International Harvester trade names.

Specifications are subject to change without notice.

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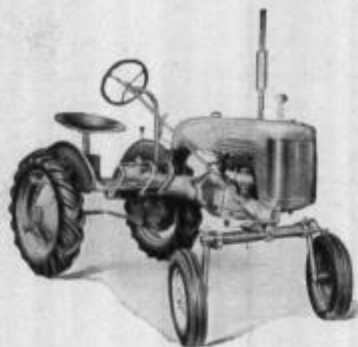
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International Harvester Tractors

28 Models—A Size and Type for Every Farming Need



FARMALL CUB for small farms up to 40 acres and "chore-boy" work on large farms.

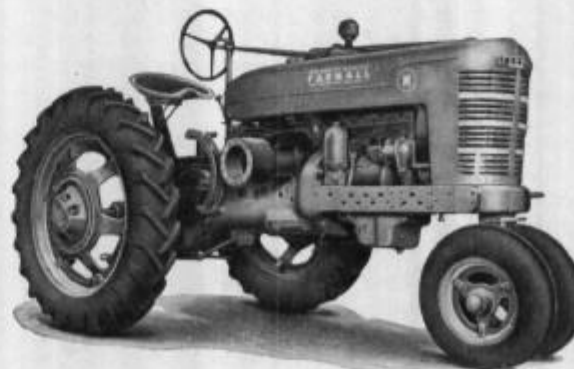
FARMALL SUPER-A a 1-row, 1-plow tractor with "Culti-Vision" for farms up to 80 acres.



FARMALL C, a 2-row tractor for 80 to 120-acre diversified farms.



FARMALL H, an ideal tractor for the average quarter-section diversified farm.



FARMALL M—biggest in the line. For large diversified farms and heavy-duty work.

International Harvester currently builds 28 different models of farm tractors. Experience has shown that no single type or size of tractor is able to meet all farm power requirements. Agriculture is too diversified and its scope is too broad for any one tractor to be universally acceptable and satisfactory on every farm. That is why International Harvester offers such a wide selection of tractors to satisfy the diverse needs and preferences of farmers everywhere.

There is a type and size of International Harvester tractor, or combination of tractors, for any farm . . . for different soil conditions and terrain . . . for specialized crops . . . and to fit the different cultural practices in producing crops. There is available for each size and type of tractor a full line of machines scaled in size to utilize the power of each tractor to its maximum efficiency. This makes it possible for every farmer to mechanize at an investment in keeping with the size of his farm and be assured of a profit.

Five Basic Types

1. Farmall tractors Cub, Super-A, Super-AV, C, H, HV, M, MV, MD, and MDV.
2. Standard wheel-type tractors W-4, W-6, WD-6, W-9, and WD-9.
3. Orchard and Grove tractors O-4, OS-4, O-6, OS-6, and ODS-6.
4. Rice Field Special tractors WR-9 and WDR-9.
5. Crawler tractors T-6, TD-6, T-9, TD-9, TD-14, and TD-18.

These five basic types, available in various sizes and models as listed above, meet the diverse needs of farmers everywhere. In addition, each model may be had with various optional or special equipment to adapt it to any unusual or highly specialized local condition.



INTERNATIONAL HARVESTER



International Harvester Tractors

Farmall Tractors

As the name implies, these are all-purpose tractors that will meet the power requirements on diversified farms and for specialized farming. Farmalls are highly maneuverable and have high clearance under the chassis and adjustable treads for straddling row crops or high beds. Their sleek, narrow chassis have provision for attaching direct-connected, matched, quick-change machines. Each tractor can be equipped with a hydraulic unit that gives effortless and fast control of all implement operating adjustments by means of small "finger-touch" levers or a control rod.

Farmall tractors are available in ten models and five different horsepower sizes ranging from the small Farmall Cub, designed for diversified crop farms of 40 acres and less, to the big Farmall M for farms up to 240 acres. Farmalls Cub and Super-A are 4-wheel tractors designed for one-row cultivation. Farmalls C, H, and M have tricycle mounting and will cultivate two rows at a time (the M two or four rows). Farmalls Super-AV, HV, MV, and MDV are high-clearance tractors designed for cane and other high-growing crops planted on beds.

Standard Tractors

These are non-cultivating, standard four-wheel tractors that are primarily used with trailing and belt-driven machines. This type of tractor is especially popular in grain-growing sections and as an auxiliary tractor for heavy work such as plowing, tillage, and belt power on row-crop farms. Standard tractors are available in three sizes.

Orchard and Grove Tractors

These are special tractors developed for the use of fruit growers and vineyardists. The "O" models are streamlined and fully shielded so that they can be operated close to trees with low-growing branches and fruit without damaging them. The "OS" models are not shielded to the same extent and are for use in orchards where trees are pruned high and there is less risk of damaging them.

Rice Field Tractors

Especially designed for rice field operating conditions where tractors must work in muddy, often wet ground and pull their equipment over borders and ditches. These tractors have large wheels, high platform, extra-large fenders, decelerator, hand-operated over-center clutch, and other special features.

Crawler Tractors

These tractors lay their own tracks and offer exceptional tractive ability. Because of the large track area in contact with the ground they do not pack the soil. Crawler tractors are ideal for use in soft, yielding soil, in wet soil, on hilly terrain where the operation of wheel-type tractors is impractical or impossible and for any operation that requires great pulling power. Because of this they have a place in virtually every type of agriculture, including fruit growing. They are available in four sizes from 32.92 to 70.59 drawbar horsepower.

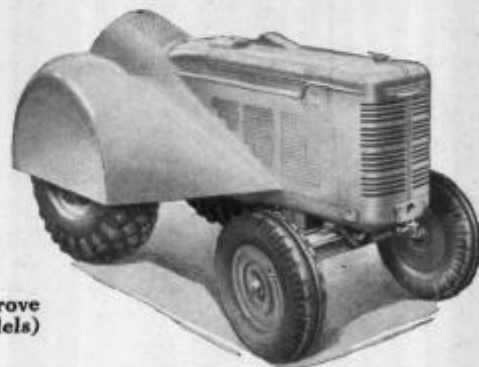
Standard Wheel-Type Tractors
(5 Models)



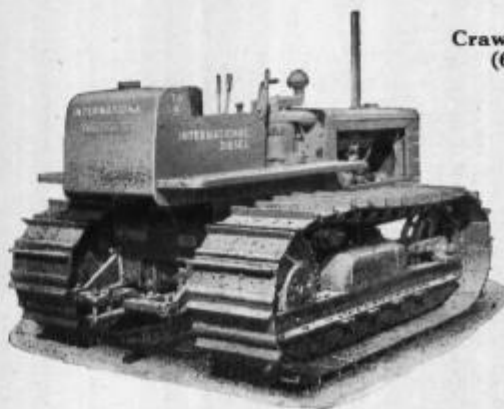
Rice Field Special Tractors
(2 Models)



Orchard and Grove Tractors
(5 Models)



Crawler Tractors
(6 Models)



Farmall Tractors

All-Purpose Tractors

Farmall tractors are the original truly all-purpose tractors. They supply power for all row-crop operations as well as for all the other work on diversified and specialized farms. They have five-in-one power — power to propel direct-connected machines, power to pull at the drawbar, power for operating belt-driven machines, power to operate the mechanisms of machines through the power take-off, and power for making implement operating adjustments. In addition to operating direct-connected and trail-behind implements they also provide power for such machines as mowers, corn pickers, beet harvesters and cotton pickers.

Farmall tractors are the ideal power units for all operations on diversified row-crop farms, especially planting, cultivating and harvesting. They serve equally well for seedbed preparation, for haying, seeding and harvesting small grain crops, and for crop processing.

The features that make Farmalls such outstanding all-purpose tractors are their high clearance for working row-crops, ability to make pin-point turns, adjustable wheel treads which fit practically any row spacing, and provision for mounting a full line of matched, quick-change implements. Available for the tractors are Farmall Touch-Control and Lift-All — hydraulic power for effortless and instantaneous one-man control of all implement operating adjustments. All controls are at the operator's fingertips and gauges can be seen at a glance. It soon becomes second nature to operate a Farmall. The chassis is narrow in design so that the operator who sits on a high-mounted comfortable seat has clear vision ahead, to each side of the tractor, and to the rear. Any implement for a Farmall works where you can see it.

Farmall tractors are always ready for work at the farmer's command, day or night, hot or cold, rain or shine, regardless of whether the work requires tractive power to push or pull, power at the belt pulley or power take-off or power to make machine operating adjustments. This five-in-one power, always available to meet every farming requirement, is what makes Farmall tractors such truly all-purpose tractors.

The Farmall System

Farmall tractors together with a full line of matched, direct-connected, quick-change implements provide a more profitable system of farming — the Farmall System. This system makes it possible to do every job easier, faster, better and to practice soil conservation. It enables the farmer to lower his costs because he can do his work faster and with a minimum of hand labor. He can increase his yields per acre because of better work done on time. At his disposal are reliable power and machines that speed up and do every operation better from seedbed preparation through the harvest. He can more easily combat the weather because he can perform every job at the time when soil conditions are

right. This assures maximum yields. Now, for the first time, all farmers can completely mechanize and enjoy the opportunity for more hours of leisure for more pleasant living.

Since the Farmall System makes it possible for farmers to diversify their crops to obtain good land usage, deposit fertilizer, and strip-crop or terrace if necessary, they not only farm at a profit, but build for the future.

Farmall tractors and matched implements provide a combination which does every job better than any combination yet designed. The implements are as maneuverable as the tractor. They can be backed into fence corners and operated right up to fences or ditches with a minimum waste of land. They will operate on the contour and terraced land without cutting corners or wasting land.

Implements, controlled by Farmall Touch-Control or Lift-All, can be quickly and easily raised and lowered when crossing grassed water runways without stopping or even slowing down.

The operating adjustments of implements are hydraulically controlled by Farmall Touch-Control and Farmall Lift-All. A finger tip touch of the tiny Touch-Control levers or a movement of the Lift-All rod quickly and easily raises, lowers, or adjusts the working units. They eliminate the need for muscular effort — any person, young or old, who is able to steer a tractor can easily become a skilled operator.

With the Farmall System, farmers can plan for the future because it is a system that keeps abreast of the advancements in agriculture.

A Farmall for Every Size Farm

Farmalls are available in five sizes to completely mechanize diversified and specialized farms.

The Farmall Cub, the smallest tractor in the line, is for diversified farms up to 40 acres. It has Culti-Vision for planting and cultivating one row of wide-spaced row crops, up to four rows of vegetables, two rows of beets and beans, and pulls one small-size plow bottom, as well as performing the many odd jobs on any farm.

The Farmall Super-A is for diversified farms up to 80 acres. It has Culti-Vision for cultivating one row of wide-spaced row crops, up to six rows of vegetables, four rows of beets and beans, and will pull one large plow bottom. The Farmall Super-A has twice the power and weight of the Farmall Cub and an additional higher field speed.

The Farmall C is for diversified farms up to 120 acres. It will cultivate two rows of wide-spaced crops, up to six rows of vegetables, four rows of beets and beans, and will pull one large plow bottom or two small plow bottoms — size and number depends on soil type and soil condition. The Farmall C has the same engine as the Farmall Super-A, but has more



Farmall Tractors

(Continued)

horsepower because the engine speed is governed at a higher r.p.m. It is of the tricycle design with large rear wheels adjustable on straight axles.

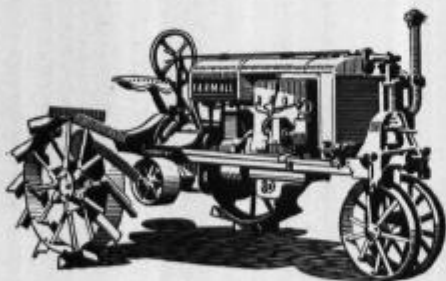
The Farmall H is for diversified farms up to 160 acres. It will cultivate two rows of wide-spaced crops and pull two plow bottoms or a two-row middlebuster in most soils. It has adequate power for operating such machines as a small combine, light-weight two-row mounted corn picker, one-row potato digger and beet harvester from the power take-off.

The Farmall M is the largest all-purpose tractor in the line and is for diversified farms up to 240 acres. Larger farms usually require more than one tractor. It will cultivate either two or four wide-spaced rows, pull a three-bottom plow, four-row middlebuster and other large-scale machines. It has rugged power for the larger harvesting and crop-processing machines, such as combines, corn pickers, cotton pickers, and ensilage cutters.

The Farmall MD is the same tractor as the Farmall M, except that it has a Diesel engine.

The Farmalls Super-AV, HV, MV and MDV have more crop clearance than the regular Farmall models. They are used primarily by the sugar cane growers, or for any crop requiring high clearance.

This line of Farmalls, together with a full line of matched implements, offers every farmer an opportunity to choose the right size tractor to completely mechanize his operations without having to farm more acres and work more hours to obtain an adequate return from his equipment investment.



Original Farmall Tractor — Built in 1923.

A Bit of Farmall History

Prior to the introduction of the Farmall, the tractors then in use were suitable only for drawbar and belt-power work. It became apparent that before tractors could profitably replace horses they would have to be able to do more than merely pull plows and operate threshers. They must be capable of doing *all* farm work, including the cultivating of row crops. With this thought in mind, International Harvester engineers set out to perfect a new idea . . . the development of a true, *all-purpose* tractor and a complete line of accompanying machines that would function with the tractor as a self-contained, easily-handled unit, capable of per-

forming all field jobs on row-crop farms. For years Harvester engineers labored with the problem. At last, in July 1922, the first real Farmall was demonstrated. This Farmall . . . the first successful all-purpose tractor built . . . could pull two plow bottoms; it could cultivate; it could operate belt machines, and it was adaptable to every power job on the farm. The following year, twenty-five pre-production Farmalls were placed in the hands of farmers for further field testing. In 1924 the first Farmall was sold. That first sale marked the beginning of a new era in row-crop production. For International Harvester engineers had produced not just another tractor but a whole new system of farming . . . the *Farmall System*. This new type of tractor was immediately accepted by farmers everywhere. The demand was such that it was necessary to build a new and modern plant devoted exclusively to the manufacture of Farmalls. By 1930 one hundred thousand Farmalls had been built. Today, there are more Farmalls in the hands of farmers than all other types of tractors combined, demonstrating not only the versatility and economy of the tractor but the basic soundness of the Farmall idea.



FARMALL CUB — smallest member of the Farmall family. For diversified farms up to 40 acres.



FARMALL M — biggest in the line. For large diversified farms up to 240 acres.



INTERNATIONAL HARVESTER





FARMALL TRACTOR SPECIFICATIONS

Farmall Tractor Specifications

(Models Cub, Super-A, Super-AV, and C)

GENERAL	CUB	SUPER-A	SUPER-AV	C
Belt horsepower, Maximum*, Gasoline.....	9.76	19.06	19	20.5
Drawbar horsepower, Maximum*, Gasoline.....	8.89	17.35	17	18.5
Speeds (at rated engine speed), m.p.h.....	Tire—7-24 in.	Tire—9-24 in.	Tire—9-36 in.	Tire—9-36 in.
First.....	2	2½	3	2½
Second.....	3	3½	4½	3½
Third.....	6½	4½	6½	5
Fourth.....	.....	10	13½	10½
Reverse.....	2½	2½	3¾	3
Belt pulley (special)	9 x 4½	8½ x 6	8½ x 6	8½ x 6
Diameter and face, in.....	1322	1157	1157	1363
Pulley speed (at rated engine speed) r.p.m.....	3114	2574	2574	3033
Belt speed, ft. per min.....	1600	541	541	539
Power take-off r.p.m. (special)	Worm gear, enclosed	Worm gear, enclosed	Worm gear, enclosed	Worm gear, enclosed
Type of steering (15 in. wheel)	3.00 & 4.00-12	4.00 & 5.00-15	4.00-19	4.00 & 5.00-15
Tire sizes, in. {front.....	6, 7, 8-24	8, 9, 10-24, 11-24 in.	9-36	7, 8, 9, 10-36
Speed, rated full load governed range, r.p.m.....	1000 to 1600	900 to 1400	900 to 1400	1000 to 1650
Number of cylinders.....	4	4	4	4
Bore and stroke, in.....	2½ x 2¾	3 x 4	3 x 4	3 x 4
Piston displacement, cu. in.....	59.5	113.1	113.1	113.1
Piston speed, ft. per min.....	733	933	933	1100
Compression ratio.....	6.5 to 1	6.0 to 1	6.00 to 1	6.0 to 1
Cylinder sleeves (replaceable), type.....	None	Wet	Wet	Wet
Clutch size (single-plate, dry-disk, spring-loaded), in.....	6½	9	9	9
Cooling system, type.....	Thermo-Siphon Pressure	Thermo-Siphon Pressure	Thermo-Siphon Pressure	Thermo-Siphon Pressure
Lubrication, type.....
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Tire size on which figures are based {front.....	4.00-12	4.00-15	4.00-19	4.00-15
Rear wheel tread (adjustable), in.....	7-24	9-24	9-36	9-36
Front wheel tread, in. {regular.....	40 to 56	40 to 68	48 to 68	47 to 71 & 56 to 80
Wheelbase, in.....	40½ and 46½	43	44 to 68	56 to 89¼
Turning radius, wheels in minimum tread, brake applied, ft.....	40½ to 56½	44 to 64	71½	81½
Length, Overall, in.....	69½	71	71½	71½
Width, overall, rear wheels set out, in.....	81½	81½	83½	83½
Width to ends of rear axles, in.....	19½	21½	27½	22½
Height, top of steering wheel, in.....	98½	106½	115	120½
Drawbar, height above ground (adjustable), in.....	63½	78	77½	89½
Drawbar lateral adjustment, in.....	47½	55½	60½	80½
Weight (less fuel and water), lb.....	62½	64½	70½	70½
Weight with special equipment† (less fuel and water), lb.....	10½ to 14½	11½ to 16½	11½ x 17½	13½ to 21½
Fuel tank, gal.....	22½	18¾	18¾	16¼
Crankcase, qt.....	1140	1990	2465	2430
Transmission case, (with belt pulley and power take-off).....	1310	2385	2825	2780
Rear axle drive housing (each), pt.....	7½	11	11	11
Air cleaner cup, pt.....	3½	5	5	5
Steering gear housing, pt.....	3½	5½ qts.	6 qts.	20 qts.
Cooling system.....	9½ qts.	¾	¾	¾
		3¼ gal.	3¼ gal.	3¼ gal.

* Maximum observed horsepower corrected to 60° F. at sea level (barometric pressure 29.92 inches of mercury) according to A.S.A.E. and S.A.E. test codes.

† Includes Touch Control (except Cub), adjustable front axle on Cub and Super-A, electric starting and lighting, belt pulley and power take-off, swinging drawbar (regular for C) and exhaust muffler.



Farmall Tractor Specifications

(Models H, HV, M, MV, MD, and MDV)

FARMALL TRACTOR SPECIFICATIONS

GENERAL	H	HV	M	MV	MD	MDV
Belt horsepower, Maximum*						
Gasoline.....	27.90	27.5	39.23	38.5	.....	.....
Distillate.....	24.34	.....	36.70	.....	36.56	36
Diesel.....	.....	.....	.....	.....	.....	.....
Drawbar horsepower, Maximum*						
Gasoline.....	25.50	25	34.44	33.5	.....	.....
Distillate.....	22.65	.....	32.86	.....	.....	.....
Diesel.....	.....	.....	.....	.....	33.04	31.5
Speeds (pneumatic tires), m.p.h. **						
Five speeds forward.....	Tire—10-38 in. 2½, 3½, 4½, 5½, 15½ 2½	Tire—9-00-36 in. 2½, 3½, 4, 5, 15½ 2½	Tire—11-38 in. 2½, 3½, 4½, 5½, 16½ 3½	Tire—10-00-36 in. 2½, 3½, 4½, 5, 16 3½	Tire—11-38 in. 2½, 3½, 4½, 5½, 16½ 3½	Tire—10-00-36 in. 2½, 3½, 4½, 5, 16 3½
Reverse.....	.....	.....	.....	.....	.....	.....
Belt pulley	9¾ x 7½	9¾ x 7½	11 x 7½	11 x 7½	11 x 7½	11 x 7½
Diameter and face, in.....	1019	1019	899	899	899	899
Pulley speed (at rated engine speed), r.p.m.....	2601	2601	2588	2588	2588	2588
Belt speed, ft. per min.....	540	540	537	537	537	537
Power take-off, r.p.m.....	.....	.....	.....	.....	.....	.....
ENGINE						
Speed, rated full load governed range, r.p.m.....	1000 to 1650	1000 to 1650	950 to 1450	950 to 1450	800 to 1450	800 to 1450
Number of cylinders.....	4	4	4	4	4	4
Bore and stroke, in.....	3⅞ x 4¼	3⅞ x 4¼	3⅞ x 5¼	3⅞ x 5¼	3⅞ x 5¼	3⅞ x 5¼
Piston displacement, cu. in.....	152.1	152.1	247.7	247.7	247.7	247.7
Piston speed, ft. per min.....	1169	1169	1269	1269	1269	1269
Crankshaft bearing journal diameter, in.....	2½	2½	2½	2½	2½	2½
Cylinder sleeves (replaceable), type.....	Dry	Dry	Dry	Dry	Dry	Dry
Clutch size (single-plate, dry-disk, spring-loaded), in.....	10	10	11	11	11	11
Cooling system, type.....	Pump Circulation Pressure	Pump Circulation Pressure	Pump Circulation Pressure	Pump Circulation Pressure	Pump Circulation Pressure	Pump Circulation Pressure
Lubrication, type.....	.....	.....	.....	.....	.....	.....
DIMENSIONS AND WEIGHT†						
Rear wheel tread (H, M and MD are adjustable), in.....	44 to 80	69	52 to 88	69	52 to 88	69
Front wheel tread, in.....	8½	60, 63, 66	88¾	60, 63, 66	88¾	60, 63, 66
Wheelbase, in.....	88¾	91½	88¾	91½	90¾	93
Turning radius, wheels in minimum tread, ft.....	8½	12½ (brake applied)	8½	12½ (brake applied)	8½	12½ (brake applied)
Clearance for crops under rear axle, in.....	24½	30¾ (front axle)	25½	29½	25½	29½
Length, overall, in.....	131½	146½	133½	146½	134½	148
Width, rear wheels set out, in.....	90¾	85½	100	85½	100	85½
Width, to ends of rear axles, in.....	75½	87½	84½	87½	84½	85½
Height, top of steering wheel, in.....	13½ to 19½	14½, 17½, 20½	78½	90½	78½	90½
Drawbar, height above ground (adjustable), in.....	13	15	14½ to 20½	15	14½ to 20½	15
Drawbar lateral adjustment, on each side of center, in.....	3325	4430	4460	5505	4750	5795
Weight (less fuel and water), lb.....	3725	4775	4910	5890	5285	6265
Weight with special equip.†† (less fuel and water), lb.....	.....	.....	.....	.....	.....	.....
CAPACITIES (approx. U.S. measure)						
Fuel tank, gal.....	17½	17½	21	21	21	21
Gasoline tank (distillate or Diesel engines), gal.....	7½	7½	7½	7½	7½	7½
Crankcase, qt.....	6	6	8	8	9	9
Transmission case, gal.....	6	6	13	13	13	13
Rear axle drive housing (each), qt.....	.....	3	.....	3	.....	3
Air cleaner cup, pt.....	1½	1½	2¼	2¼	2¼	2¼
Steering gear housing, pt.....	1	1	1	1	1	1
Cooling system, gal.....	4½	4½	6	6	6¾	6¾

* Maximum observed horsepower with pneumatic tire equipment, corrected to 60° F. at sea level (barometric pressure, 29.92 inches of mercury) according to A.S.A.E. and S.A.E. test codes.

† Based on pneumatic tires: H—5.50-16 in. front and 10-38 in. rear; M and MD—6.00-16 in. front and 11-38 in. rear; HV—6.00-20 in. front and 9.00-36 in. rear; MV and MDV—6.00-20 in. front and 10.00-36 in. rear.

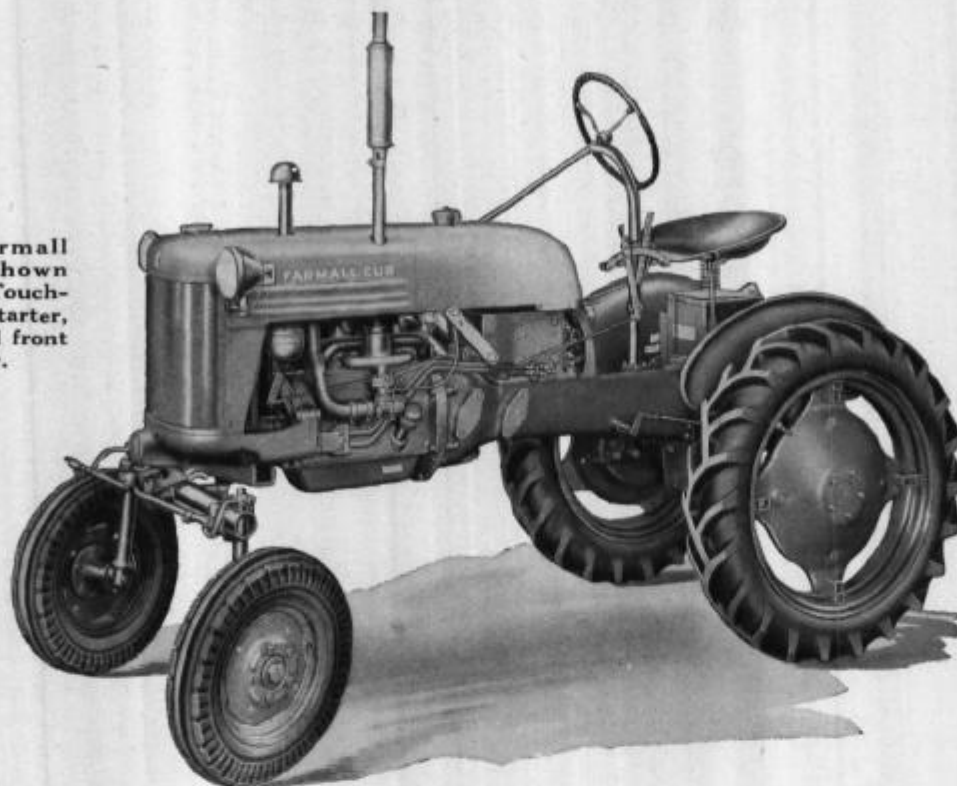
** Low 1st gear of 1½ m.p.h. and high 4th gear of 7 m.p.h. available (special).

†† Including hydraulic Lift-All, electric starting and lighting, belt pulley, power take-off, swinging drawbar (H, M and MD) and exhaust muffler.

Farmall Cub Tractor



Illust. 1 — Farmall Cub tractor shown equipped with Touch-Control, lights, starter, adjustable-tread front axle, and muffler.



- The right size for —
Complete mechanization of small farms
Vegetable growers
Auxiliary tractor on large-acreage farms
- Adjustable wheel treads of 40 to 56 inches when equipped with the adjustable front axle.
- 4-in-1, all-purpose tractor.
- Farmall Touch-Control (hydraulic power) — or Manual control — In either type, one lever raises, lowers, or holds the implement at a selected working depth.
- Matched quick-change implements combine low-cost and operating ease.
- Culti-Vision gives a clear view of the work being done, as well as an unobstructed view ahead.
- High maneuverability — easy to operate.
- Economical, balanced power plant.

Regular Equipment

Engine: Four cylinder, $2\frac{5}{8} \times 2\frac{3}{4}$ in., L-head, gasoline engine, IH magneto, variable-speed governor with manual control, oil filter with removable filtering element, gear-type circulating oil pump for pressure lubrication, thermo-syphon circulation of water, oil-bath-type air cleaner, updraft carburetor with fuel strainer and sediment bowl, and ventilated crankcase.

Chassis: Transmission with three forward speeds (2, 3, $6\frac{1}{8}$ m.p.h.) and one reverse ($2\frac{1}{4}$ m.p.h.). Foot-operated differential brakes on bull pinion shafts. Large implement-type, spring-mounted seat. Rear wheels with adjustable tread (40 to 56 in.). Non-adjustable front axle with two treads ($40\frac{5}{8}$ in. and $46\frac{3}{8}$ in.). Vertically adjustable, reversible drawbar.

Special Equipment

Touch-Control. Belt pulley. Power take-off (1600 r.p.m.). Electric starting and lighting with two head lamps and one rear lamp. Front wheel weights, 30 lb. each, maximum of two per wheel. Rear wheel weights are 150 lb. each with a maximum of two per wheel. Adjustable front axle, providing variable front wheel treads to correspond with rear wheel treads. Pneumatic tire pump. Swinging drawbar. Exhaust muffler. Detachable seat pad. Upholstered seat. Exhaust spark arrester.

Balanced Farm Power

The Farmall Cub is the smallest tractor in the Farmall line and should completely mechanize the diversified farm of 40 acres or less, the vegetable farm, and larger farms requiring more than one tractor. It represents a balanced combination of tractive ability, economy, riding comfort, and rugged efficiency.



Farmall Cub Tractor

(Continued)



The Farmall Cub provides balanced power for the operation of matched, quick-change implements plus flexible power for a variety of applications about the farm. This versatile power plant delivers power in five different ways:

- (1) Power at the drawbar for pulling.
- (2) Power at the tractor mounting pads for mounted implements.
- (3) Power at the belt pulley for driving belt-operated machines.
- (4) Power at the power take-off for operating various pull-behind machines.
- (5) Power at the Touch-Control arms for raising, lowering, and holding mounted implements by hydraulic means (special equipment).

A Variety of Matched Implements

A full line of matched, quick-change implements is available for use with the Farmall Cub. Universal mounting equipment simplifies the attachment of Farmall Cub implements. Furthermore, this method of universal mounting reduces implement costs. Attaching parts remain on the tractor and are used for all implements. Each implement has been reduced to the absolute essentials—slip-on brackets, tool bars, and clamps—just enough to hold the ground tools in the proper position for efficient work.

Implements are controlled from the tractor seat either manually by one lever or hydraulically by Farmall Touch-Control.

A Rugged Tractor

The Cub is as rugged and sturdy as any Farmall, and it is capable of operating 24 hours per day if necessary. From the experience of over two decades in building Farmall tractors, the International Harvester Company has been able to design and manufacture the truly well-balanced, small, economical tractor complete with matched, easy-to-operate implements—namely, the Farmall Cub and Cub implements.

The Farmall Cub is designed and built to do easier and better every job ordinarily handled by two or three horses or mules on the small farm or truck garden. On the large farm, the Cub can handle work which would not warrant tying up a large tractor.

Ease of Operation

Controls operate easily and are grouped for convenience. The gearshift lever is located where you would normally drop your left hand from the steering wheel. There are three speeds forward and one in reverse. The clutch is foot-operated and permits applying power to the load smoothly. Differential brake pedals are provided so that one or the other of the rear wheels may be braked separately when it is desired to make the sharpest possible turn. The two brakes may be readily latched together to give equal braking on both rear wheels when traveling at high speeds.

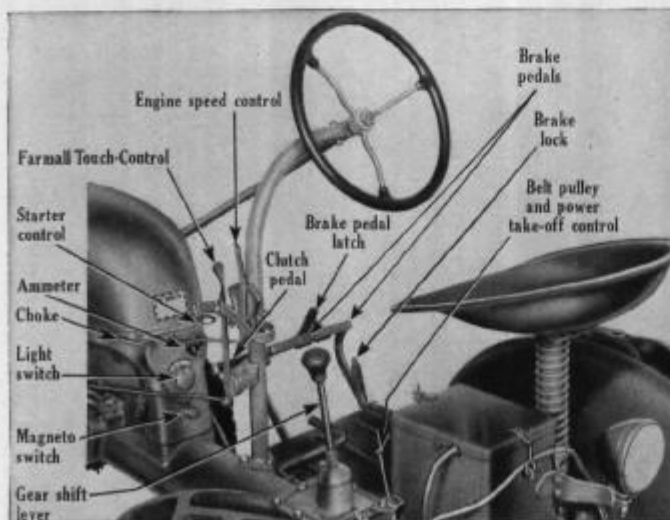
The engine speed lever, choke control, magneto switch, and starter control are conveniently located in front of the operator. When Touch-Control is supplied, its operating lever is to the left of the engine speed control, giving centralized control of all operating adjustments. The oil pressure gauge, and the light switch and ammeter (when lights and starter are supplied) are directly ahead of the steering post.

Highly Maneuverable

Steering is easy and effortless. By using one of the two differential brake pedals, turns as sharp as $8\frac{1}{2}$ feet in radius may be made. The engine speed control lever, which adjusts the variable governor, together with the gearshift, gives a wide range of speeds up to $6\frac{1}{2}$ m.p.h. Because of its maneuverability, the Farmall Cub can operate efficiently in small fields.

Operating Comfort

A full, well-shaped, implement-type seat, cushioned by a large coil spring, takes the bumps and vibrations out of riding over rough fields. The shape of the seat is designed to give the operator full support. The platform is large and roomy and allows the operator to stand if he wishes.



Illust. 1—Cub controls are simple and are conveniently placed. Separate brake pedals with a connecting latch are provided for the left and right rear wheels.



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Farmall Cub Tractor

(Continued)



Culti-Vision

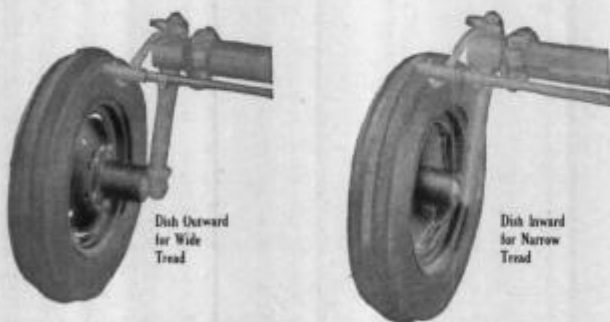
A clear view of the row ahead is provided by the exclusive Culti-Vision construction feature of the Cub tractor. The seat and steering wheel are so placed that the operator has a clear view to the front, the sides, and even beneath the tractor. This feature permits close cultivation of even the smallest seedlings.

Ample Ground Clearance

A total ground clearance of $20\frac{3}{8}$ inches or better extends the full width of the front axle and backwards past the rear axle.



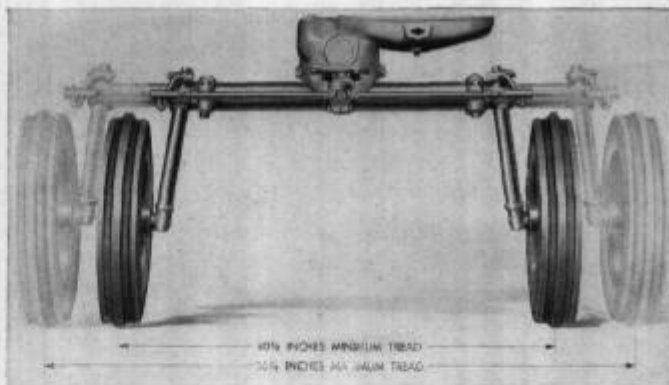
Illust. 1 — The Farmall Cub has ample crop clearance.



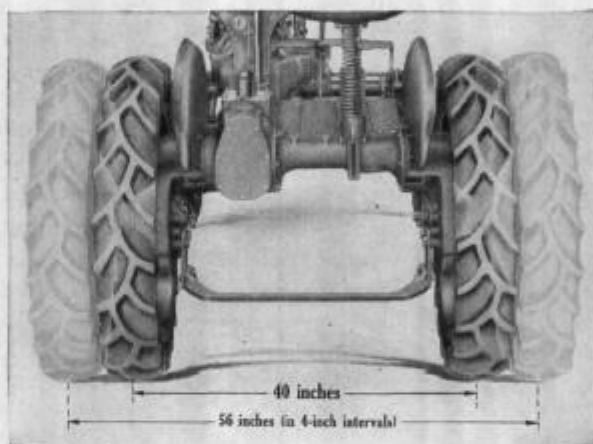
Illust. 2 — Standard front wheels may be reversed on their hubs to give two tread spacings — $40\frac{5}{8}$ and $46\frac{3}{8}$ inches.

Adjustable Wheel Treads

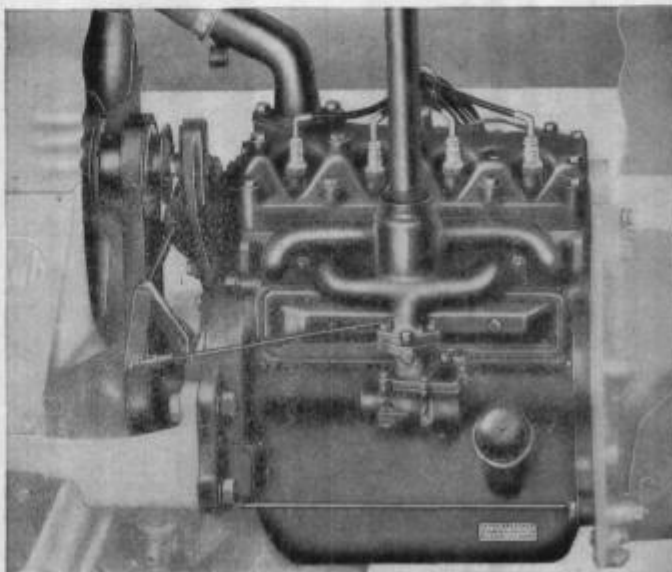
As regularly supplied, the front wheels give two tread spacings: $40\frac{5}{8}$ inches and $46\frac{3}{8}$ inches. These spacings are obtained by reversing the front wheels on their hubs so that the dished-in sides are facing outward in one case and inward in the other. An adjustable front axle, obtainable as special equipment, gives a range of $40\frac{5}{8}$ to $56\frac{5}{8}$ inches in four-inch intervals. The rear wheels are adjustable, ranging from 40 to 56 inches in four-inch intervals.



Illust. 3 — The adjustable-tread front axle permits spacings from $40\frac{5}{8}$ to $56\frac{5}{8}$ inches in four-inch steps. Thus, the Farmall Cub is adaptable to most any row-crop.



Illust. 4 — Rear wheels are adjustable from 40 to 56 inches in four-inch steps.



Illust. 1 — The Farmall Cub engine incorporates the latest developments of International Harvester engineers.

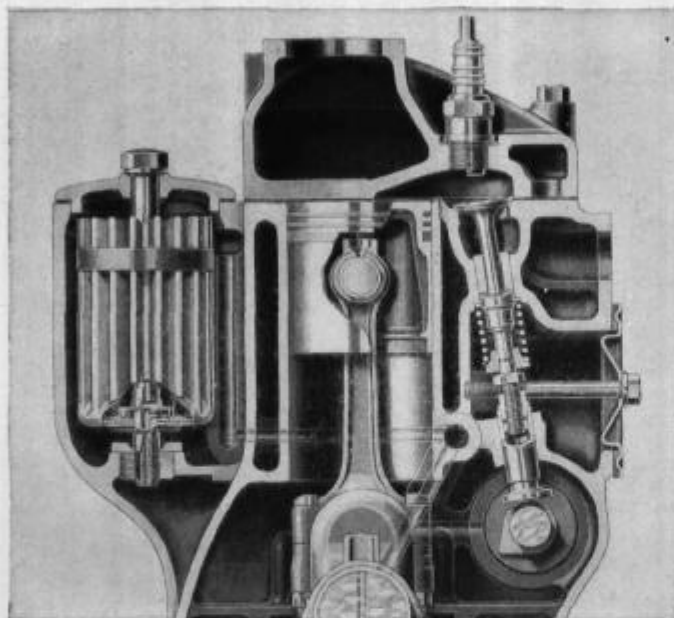


Farmall Cub Tractor

(Continued)

Sturdy, Efficient Engine

The rugged, four-cylinder Cub engine has been built for long, trouble-free life. All the experience of International Harvester, in building engines of all sizes for farmers all over the land, has been incorporated into the Cub. Tests have shown the ability of the Cub engine to operate successfully in all climates, in all weather, in abrasive dust, in mud, below sea level, and high in the mountains. No quality has been sacrificed in the interests of cost.



Illust. 2 — Cross-sectional view of special high-compression combustion chamber which gives new fuel economy, and the oil filter built right into the crankcase.

Fuel Economy

Careful research and experimentation has resulted in the development of a high-compression combustion chamber which sets new standards in obtaining maximum work from gasoline.

Clean Fuel

Every ounce of fuel is cleaned before it enters the carburetor. The combination fuel strainer and sediment bowl, set in the fuel line, removes every vestige of water and dirt from the fuel. It is a simple matter to glance at the sediment bowl to determine if it needs cleaning.

Clean Air

An oil-bath-type air cleaner washes the air as it passes from the intake toward the carburetor. Thus, even the most minute particles of dust are removed before reaching the precision-built, moving parts of the engine.

Pressure Lubrication

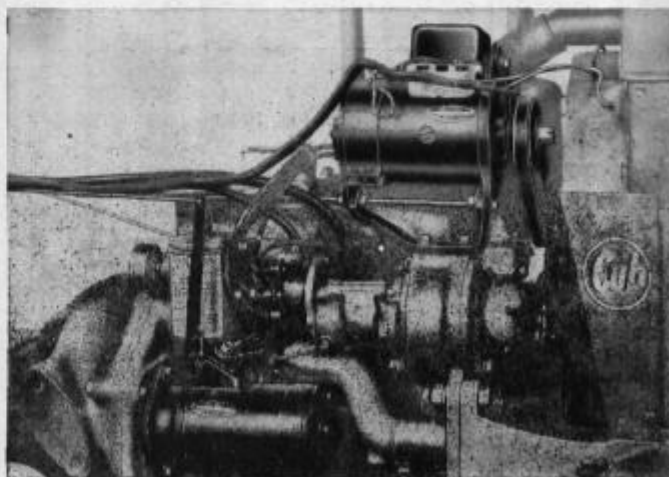
Pressure lubrication forces oil through drilled passages to the crankshaft bearings, the connecting rod bearings, and the camshaft bearings. Thus, all bearing surfaces are positively, completely, and continuously covered with a cushioning film of friction-reducing oil.

Filtered Oil

A Purolator Micronic resin-impregnated, paper-type oil filter keeps the lubricating oil in the Cub engine clean. This is especially important, because tractor farming is frequently conducted under severe conditions of dust. The filter removes all abrasive particles as small as a micron—.000039 of an inch in size. The results are longer oil and engine life. Thus, oil can be used for 120 hours of operation between changes.

Replaceable Bearings

Crankshaft and connecting rod bearings in the Farmall Cub engine are precision-manufactured. They maintain a full, even oil film between bearing surfaces, insuring that the bearings will run cool even though the engine is overloaded for long periods. The bearings are of thin-walled, babbitt-lined, steel-backed construction. Should they become worn or damaged, they can be quickly and easily replaced. Original, accurate clearances will again be obtained.



Illust. 2 — Starter and generator. Electric starting is more than a convenience. It speeds operations, since the operator has complete control of the tractor from the operator's seat. The temptation to idle the engine is reduced.



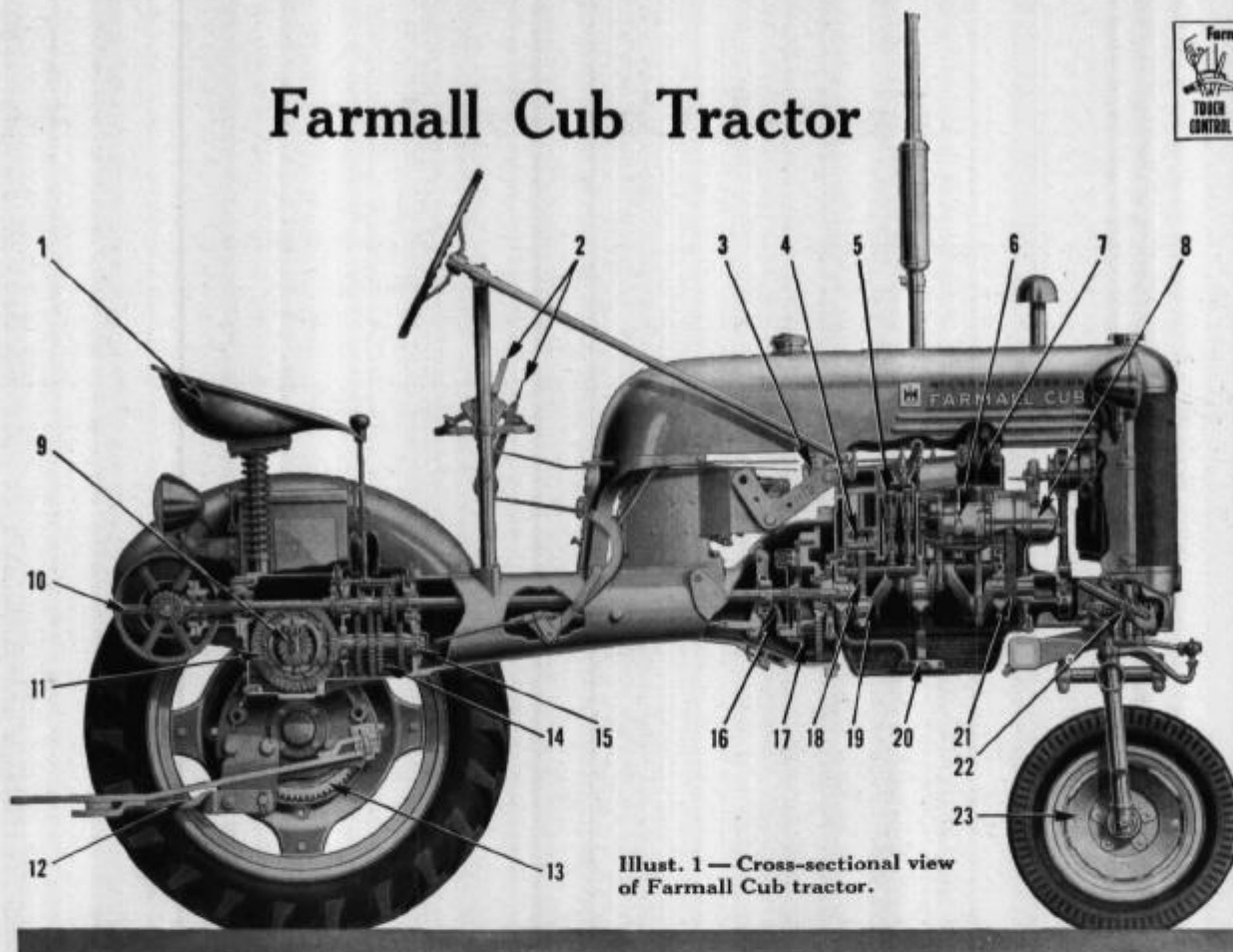
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Farmall Cub Tractor



Illust. 1 — Cross-sectional view of Farmall Cub tractor.

Key to Farmall Cub

1. Seat — Large bucket type mounted on coil springs to provide a smooth ride.

2. Farmall Touch-Control and Engine Speed Control Levers — Provides hydraulic power at operator's fingertips for making implement operating adjustments. Speed control lever sets governor for desired engine speed.

3. Fuel Strainer and Sediment Bowl — Dirt retaining filter and glass sediment bowl trap water and dirt in fuel. Bowl and filter removable for cleaning.

4. Pistons — Equalized in weight for smooth, balanced operation. Two compression rings and one oil control ring assure maximum power and prevent lubricating oil from entering the combustion chamber. Each piston pin floats in the piston and in a bushing on the connecting rod. These floating pins, with electric-induction hardened surfaces, assure long engine life.

5. Valves — Corrosion-resistant, exceptionally hard, chrome-nickel alloy steel assure leakproof gas seals. Valve adjustment is made through an opening at the side of the engine.

6. Magneto — Complete self-contained unit. Impulse coupling assures a hot spark for starting.

7. Cooling System — Simple thermo-siphon type.

8. Variable-Speed Governor — Regulates the quantity of fuel-air mixture which enters the engine, instantly adjusting the engine power output to meet the load requirement, and maintains a uniform engine speed. This hand-controlled, variable-speed governor makes possible lower engine operating speeds without decreasing drawbar pull.

9. Differential — Consists of two pinion gears and two side gears which have the strength and hardness to withstand the strain of many turns.

10. Power Take-Off and Belt Pulley — Power take-off is driven directly from the engine through the transmission spline shaft. Belt pulley is driven from the power take-off through a set of beveled gears. Both special equipment.

11. Bevel Pinion and Gear — Precision-cut gears run in an oil bath and are mounted in a one-piece case which rigidly holds them in perfect alignment.

12. Reversible Drawbar — Adjustable to three vertical positions. It can be placed in a forward position for connecting rear-mounted

implements, and in this position may be raised or lowered from the tractor seat.

13. Rear Axle Drive Gear — Rugged rear axle drive gear with induction-hardened teeth, rotates on two tapered roller bearings which are protected by a high-grade, spring-loaded leather oil seal.

14. Transmission — Three speeds forward (2, 3, and 6 1/4 m.p.h.) and 2 1/4 m.p.h. in reverse. Shafts rotate on precision, free-rolling ball and roller bearings. Minimum friction permits maximum engine power to be transmitted to the rear wheels. Gear teeth and spline-shaft are electric-induction hardened, which makes surfaces extremely hard but leaves the internal structure of the gears and shaft tough and shock resistant.

15. Ball and Roller Bearings — Twenty-three precision ball or roller bearings used in this quality tractor. They provide a smooth flow of power, maximum operating efficiency, and assure long life.

16. Clutch — Single-plate, 6 1/2-inch, dry-disk, foot-operated. Transmits engine power smoothly to load.

17. Flywheel — Heavy, perfectly balanced for smooth flow of power even under a variable load.

18. Connecting Rods — Steel I-beam drop forgings, fitted with replaceable bushings at the upper ends and precision-built, steel-backed, babbitt-lined bearings at the lower ends, assure long service.

19. Crankshaft — Strong, balanced crankshaft with electric-induction hardened journals which produces extremely hard surfaces while leaving the internal structure tough and shock-resistant. It rotates on precision-built, steel-backed, babbitt-lined bearings. Crankshaft is sealed at each end by spring-loaded rawhide washers. The shaft is drilled for connecting rod bearing pressure lubrication.

20. Oil Pump — Gear-type pump, located at rear of camshaft, supplies oil for positive pressure lubrication.

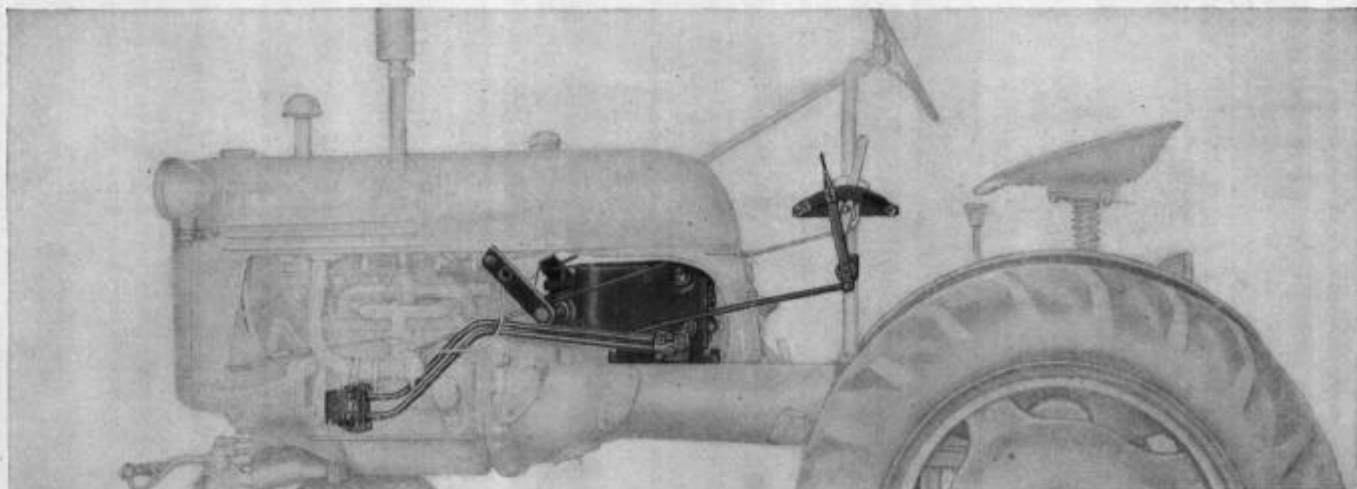
21. Timing Gear Train — Hardened-steel gears of the helical type for smooth, quiet operation.

22. Steering Gear — Worm and gear type, working in an oil bath. Spring-loaded leather seals keep the dirt out and the oil in.

23. Front Wheels — Rotate on tapered roller bearings. Wheels consist essentially of pressed-steel disks with integral rims. They can be demounted from the wheel hubs and reversed to give two tread positions.



Farmall Cub Tractor



Illust. 1—Touch-Control, on the Farmall Cub, showing the hydraulic mechanism installed at the rear of the engine. The Front Rockshaft is an integral part of the Touch-Control mechanism. Touch-Control furnishes hydraulic power to the Universal Mounting Frame and Rear Rockshaft for raising, lowering, and controlling the working depth of the implements.

Farmall Touch-Control

Available as special equipment on the Cub is Touch-Control, the effortless, instantaneous, two-way control of farm equipment by means of hydraulic pressure. Gone are the old days when tractor operators had to heave at cumbersome and awkward levers. Now a fingertip touch on a single control lever will raise or lower heavy implements and also control the working depth of such implements as cultivators, planters, and disk plows.

Faster and Easier Farming

Touch - Control makes it much easier to control both the tractor and the implement at the ends of the field or when crossing grassed waterways. A mere flip of the Touch-Control lever raises or lowers the implement. The hydraulic power of Touch-Control is supplied by an engine-driven pump. This ready supply of power will save the tractor operator thousands of foot pounds of arm work in a single day.



Illust. 2—A fingertip touch on the control lever will raise or lower an implement.

How Touch-Control Works

Touch-Control for the Farmall Cub is identical to that used on Farmalls Super-A and C, with one exception: The Cub has but one hydraulic cylinder, one control lever, and one rockshaft. Otherwise, the system is similar to that described on page 9 for Farmalls Super-A and C. An adjustable indicator on the Touch-Control quadrant is easily aligned with the Touch-Control lever when the implement is set for the desired working depth. Thereafter, the operator may return the implement to that exact position by an effortless fingertip touch on the lever.

The hydraulic unit mounts directly behind the engine and includes a Front Rockshaft as an integral part of the mechanism. As on the larger tractors, the Cub Touch-Control will operate both the Universal Mounting Frame for forward-mounted implements and the Rear Rockshaft for rear-mounted implements.

Manual Control of Implements

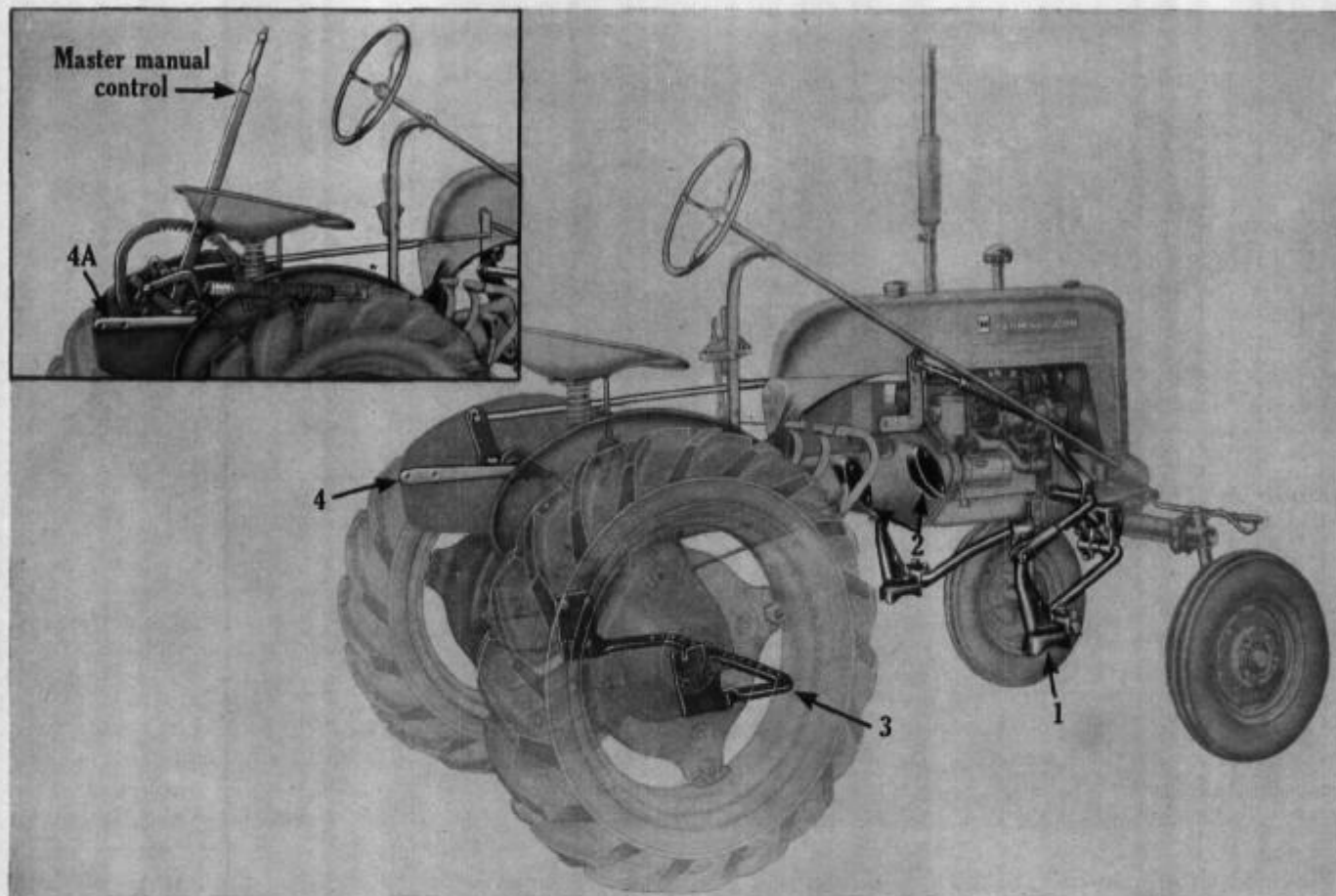
Manual Control furnishes simple, sturdy, single-lever manual control for raising, lowering and adjusting all direct-connected Cub implements. It consists of: (1) A Master Control Lever, with counter-balancing spring and Rear Rockshaft, which is mounted on top of the tractor rear axle housing. It operates rear-mounted implements. The control lever is conveniently located, to the left of the operator's seat. (2) A Front Rockshaft, which is centrally located on the tractor and connected to the master control lever, for operating front-mounted implements.



Farmall Cub

Four Attaching Points

For All Implements



Illust. 1 — Farmall Cub with Touch-Control or Manual Control, Showing Attaching Points for Implements: (1) Universal Mounting Frame, (2) Mounting Pads, (3) Reversible Drawbar, (4) Rear Rockshaft for Tractors equipped with Touch-Control, (4A) Rear Rockshaft for Tractors equipped with Manual Control.

Permits Quick-Change from One Implement to Another

Today's emphasis on diversified farming makes it important to be able to change from one implement to another in minimum time. In keeping with this trend, four easy-to-reach attaching points, plus Cub Touch-Control and Master Manual Control, have been devised for all direct-connected implements that mount on the Farmall Cub tractor.

Simplified Implements

These four attaching points make possible the complete elimination of all cumbersome frames and support wheels on the implements. Cultivators are simple tool bars with clamps for holding standards.

Plows consist of a beam, colter and bottom. This new simplicity has been designed into the entire line of implements for the Farmall Cub tractor.

The results are low cost, ruggedly simple implements that can be changed in a matter of minutes. Highly diversified farming can be carried out without increasing operating costs and machine investment.

The universal mounting frame can be attached to the tractor very quickly. Once it is in place it need not be removed.

The drawbar is shown in the forward position. It is a simple matter to loosen the retaining bolts and move the drawbar to the rear where it serves as a conventional drawbar.

Only two mounting pads are indicated in the illustration; there are eight easily-accessible, strategically-located mounting pads on the tractor.



Farmall Cub

Four Attaching Points

(Continued)



Universal Mounting Frame

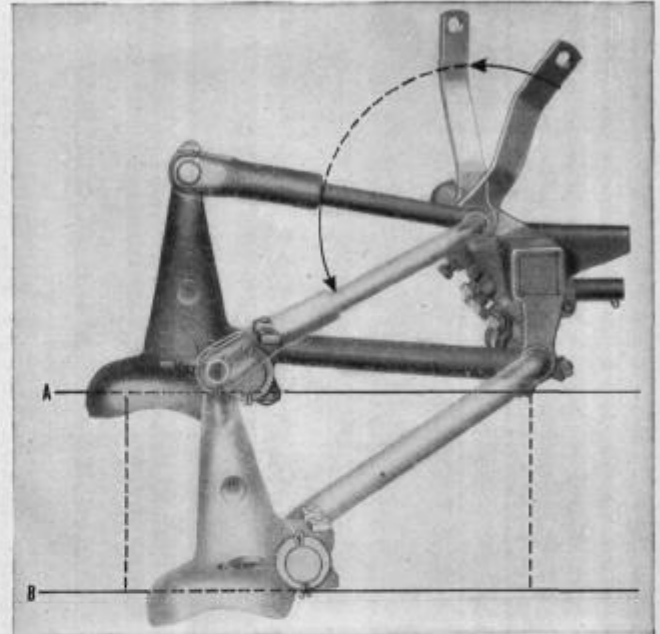
Quick Change Mounting

In a matter of minutes, implements can be mounted or removed. The Cub implements are attached to the tractor at four points: Tractor Mounting Pads (eight), Universal Mounting Frame, Rear Rockshaft, and Reversible Drawbar.

Mounting Pads — There are eight bosses having easy-to-reach tapered bolts which match the tapered holes in the slotted slip-on brackets of the implements. No matter how often implement units are removed, or replaced, they are always precisely located in the same position because of the centering action of the tapered bolts.

Universal Mounting Frame — for front-mounted implements — No alterations or complicated adjustments are necessary . . . merely mount the frame in the square-shaped hole beneath the front end of the tractor; tighten the retaining bolts; connect the spring-tensioned telescoping control rods to the Touch-Control power arms or the manual control center rockshaft arms, and "prestol!" the tractor is ready for easy, single-point control of all front-mounted implements.

Rear Rockshaft Unit — for raising and lowering rear-mounted, direct-connected implements. This unit attaches to the top of rear housing of the tractor. For Touch-Control implements, the lifting lever is connected to the Touch-Control left power arm. For manual control, the rear rockshaft is a part of the master control lever, which is to the left of the driver's seat.



Illust. 1 — The parallel action of the Universal Mounting Frame permits the implement tools to retain the proper pitch regardless of the depth at which they operate, and assures that all tools work at the same depth.

Matched Implements for Convenience

Available for use with the Farmall Cub are specially designed, matched, quick-change implement units and a variety of scaled-to-size, pull-behind implements. Together, they comprise a perfect combination for mechanizing the small farms.



Illust. 2 — The right-hand front unit of the Cub-144 cultivator is being positioned under the Universal Mounting Frame.



Illust. 3 — Next, it's a simple matter to lower the Universal Mounting Frame onto the cultivating unit. No lifting required.



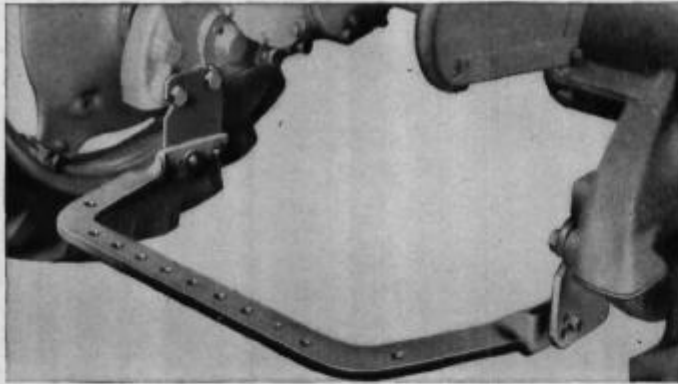
Illust. 4 — A few turns of the wrench on the tapered nut, and the implement is locked in place. Attaching other front-mounted implements is just as simple.



Farmall Cub

Four Attaching Points

(Continued)



Illust. 1—The Reversible Drawbar, shown in the normal position, can be raised or lowered quickly by changing the position of the height adjusting bolts.

Reversible Drawbar

The drawbar is an integral part of the tractor. To reverse it, for attaching rear-mounted or trail-behind implements, is a simple operation. Merely loosen the retaining bolts, turn the drawbar around and slip it onto the other set of retaining bolts and tighten.

The drawbar can be adjusted to three fixed vertical positions— $10\frac{5}{8}$, $12\frac{5}{8}$ and $14\frac{5}{8}$ inches above the ground. In addition, when in the forward position with the height adjusting bolts removed, the drawbar height can be controlled, by a lever, from the tractor seat.



Illust. 2—Removing the drawbar preparatory to placing it in the forward position.



Illust. 3—The Reversible Drawbar being placed in the forward position.

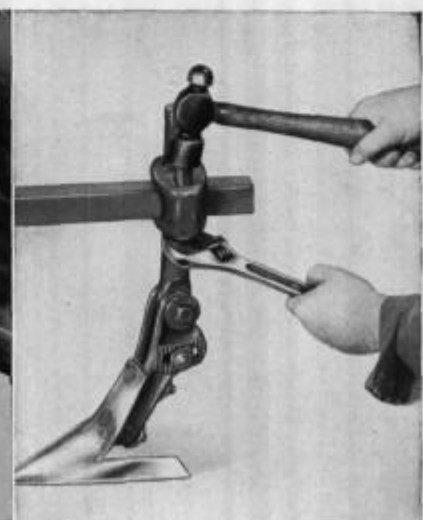
Attaching Rear-Mounted Implements on the Tractor Drawbar Mounting Pads



Illust. 4—Mounting an implement on the rear of the tractor is as simple as ABC. Here the Cub-144 cultivator rear section is being slipped onto the rear tractor mounting pads.



Illust. 5—It's only a matter of another minute and the two self-locking bolts are snugly holding the Cub-144 rear section in place . . . ready to work.



Illust. 6—Changing the position of the standard on the tool bar is simple. Just loosen the self-locking wedge bolt, slide the standard to the desired position, then tighten the wedge bolt.



Farmall Cub Tractor



Table of Farmall Cub Direct-Connected Implements
(Indicating attaching units required and the approximate work capacity of each machine.)

IMPLEMENT	MANUAL CONTROL			TOUCH-CONTROL		Approx. Acres Per Day
	Lever and Rear Rockshaft	Front Rockshaft	Universal Mounting Frame	Rear Rockshaft	Universal Mounting Frame	
PLOWING						
Cub-193 Moldboard Plow, one-way.....	*	—	—	*	—	3½
Cub-189 Moldboard Plow, two-way.....	*	—	—	*	—	3½
Cub-151 Disk Plow.....	*	*	—	—	—	3
Cub-12-D Disk Harrow-Plow.....	*	*	—	—	—	4½
Cub-16 Middlebuster.....	*	—	—	*	—	10
TILLING						
Cub-3 Spring-tooth Field Cultivator.....	*	—	—	*	—	16
PLANTING						
Cub-171 Blackland Planter.....	*	*	*	—	*	10
Cub-172 Runner Planter.....	*	*	*	—	*	10
Cub-474 Vegetable Planter, 4-row.....	*	*	*	—	*	12
Cub-435 Vegetable Planter, 4-row.....	*	—	—	*	—	12
Cub-135 Vegetable Planter, 1-row.....	*	*	*	—	*	3
CULTIVATING						
Cub-144 Corn and Cotton Cultivator, 1-row.....	*	*	*	*	*	12
Cub-252 Beet and Bean Cultivator, 2-row.....	*	*	*	—	*	6
Cub-447 Vegetable Cultivator, 4-row.....	*	*	*	—	*	9½
HARVESTING (Hay only)						
Cub-22 Mower, 4½-foot.....	*	*	—	—	—	15
LEVELING AND GRADING						
Cub Leveling and Grading Blade.....	*	*	—	—	—	—

Note: If the owner already has a Cub-144 Cultivator, he will have all the necessary Universal attaching parts for the above implements.

He may use the rear sweeps of the Cub-144 cultivator with certain of the planters and vegetable cultivators above.

Note: The No. 6 weeder mulcher is employed as an attachment for the Cub-144 cultivator. Since the cultivator includes all the necessary universal mounting parts, no more need be ordered. Work capacity of the No. 6 is 36 acres per 10-hour day.

Trailing Implements That Can Be Used for Farmall Cub Tractor

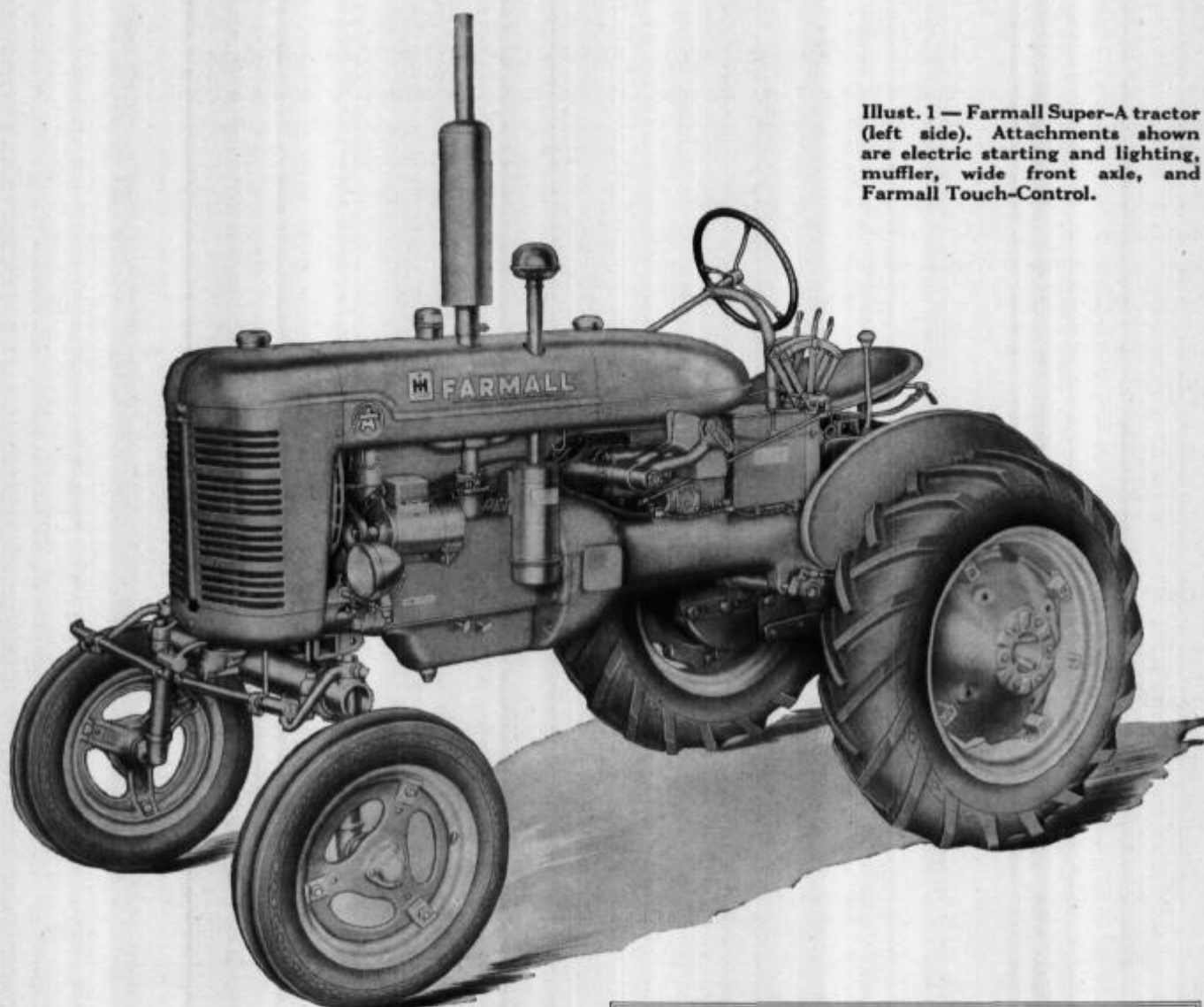
IMPLEMENTS	Capacity Acres in a 10-hour day
No. 23-A Tandem Disk Harrow, 4-foot.....	14
No. 10-AF Single Cut Disk Harrow, 6-foot.....	21
No. 1 Tractor Spring Tooth Harrow, 4-foot, 6-inch.....	15
Two-section, Peg-tooth Harrow.....	30
No. 50 Soil Pulverizer (double-gang), 86-inch.....	25
Type R Grain Drill, 12-7.....	20
No. 5 Endgate Seeder.....	100
No. 4 Lime and Fertilizer Distributor, 8-foot.....	25
No. 40 Series Beet and Bean Planter, 4-row.....	18 to 26
No. 200 Series Corn Planter with Tractor Hitch.....	18
No. 100 Manure Spreader.....	..
One-row, Ground-drive Corn Binder.....	10
Dump Rake.....	40
Side-Delivery Rake.....	25
Cylinder-Rake Hay Loader.....	..
All-Purpose Farm Truck.....	..



Farmall Super-A Tractor



Illust. 1 — Farmall Super-A tractor (left side). Attachments shown are electric starting and lighting, muffler, wide front axle, and Farmall Touch-Control.



Balanced Power

The Farmall Super-A tractor, second in a full line of Farmall tractor models, is an ideal combination of tractive ability, operating economy, riding comfort and rugged efficiency. It is fast and maneuverable, and it is easy to operate.

40 to 80 Diversified Acres

The Farmall Super-A is designed to do easier, faster and better, all the jobs ordinarily handled by three or four horses or mules on farms of 40 to 80 diversified acres. Also, this tractor is ideally suited to the type of operation that would not be economical for larger equipment on farms of 240 acres or more, and, when used in fleets, is the preferred power for large-scale truck farming.

- An all-purpose tractor for the man who farms 40 to 80 diversified acres . . . and efficient auxiliary power for the man with larger acreage.
- Built to achieve the maximum in rugged efficiency . . . riding comfort . . . operating economy.
- 4-in-1, all-purpose power to push front-mounted implements . . . to pull trailing implements . . . power take-off to operate implement mechanisms . . . belt power for the final crop processing.
- Farmall Touch-Control for effortless raising, lowering and adjusting all direct-connected implements.
- Wheel tread adjustments to accommodate a wide range of row spacings for every type of crop and tillage practice.



INTERNATIONAL HARVESTER



Farmall Super-A Tractor



Work Capacity

The approximate amount of work the Farmall Super-A will do in a 10-hour day is as follows:

Moldboard plows: One 12, 14, or 16-inch bottom (size depends on the type of soil and the plowing depth)—3 to 6 acres.

Disk plow: Two disks, 14 to 20-inch cut—4 to 7 acres.

Middlebuster: One bottom—8 to 14 acres.

Disk harrow: 10-ft., single cut—40 acres.

Peg-tooth harrow: 2 or 3 sections—45 to 65 acres.

Planters: One 40-in. row—10 to 18 acres; two 40-in. rows—20 to 36 acres; two 26-in. rows—14 to 20 acres; four 12 to 22-in. rows—11 to 20 acres; six 12 to 16-in. rows—16 to 21 acres.

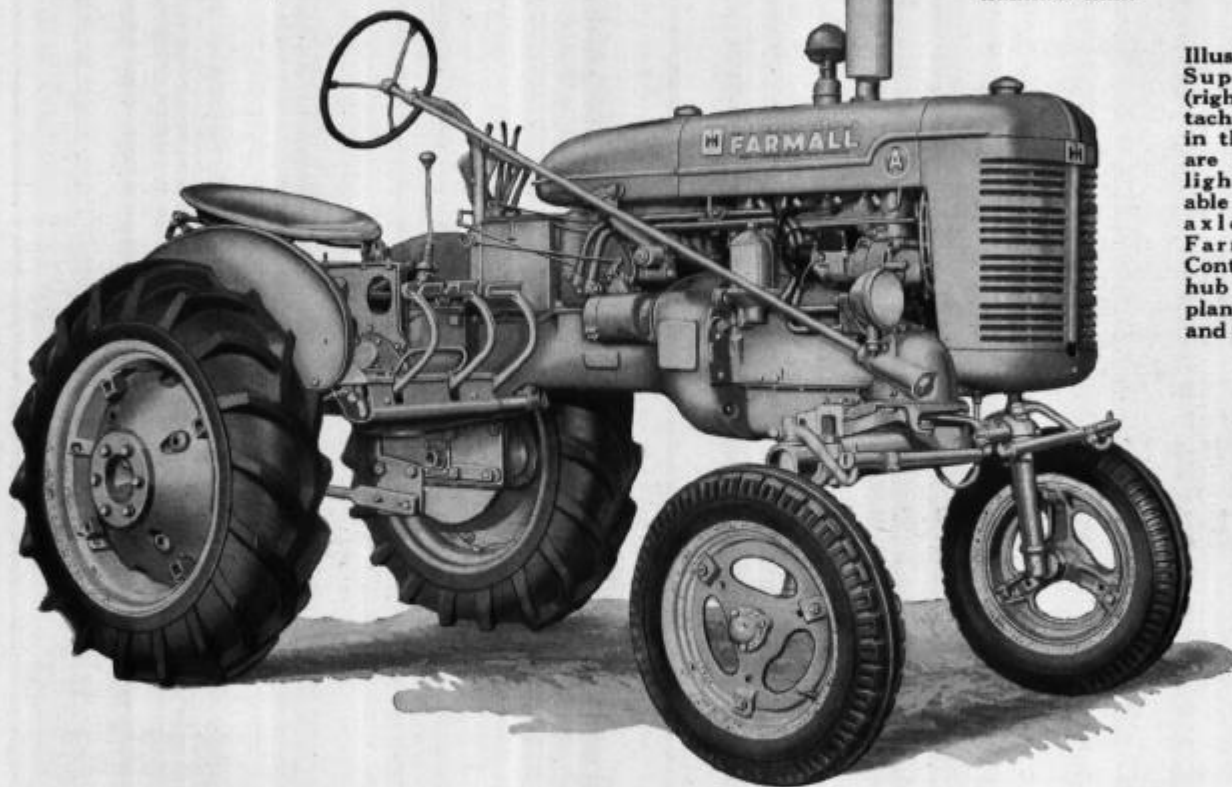
Grain drill: 16 x 6—20 to 30 acres.

Cultivators: One 40-in. row—14 to 18 acres; four 12 to 22-in. rows—11 to 20 acres; six 12 to 16-in. rows—16 to 21 acres.

Mower: 7-ft. cutter bar—30 to 40 acres.

Combine: 4-ft.—10 acres.

Belt power: No. 30 corn sheller, Type B or D feed grinders, or No. 6 hammer mill.



Illust. 1 — Farmall Super-A tractor (right side). Attachments shown in the illustration are starting and lighting, adjustable tread front axle, muffler, Farmall Touch-Control, and drive hub for operating planter seed-plate and fertilizer drive.

Farmall Touch-Control

The Farmall Super-A tractor, equipped with Farmall Touch-Control, accomplishes the above listed jobs with a minimum of effort on the part of the operator. This attachment permits the operator to lift, lower, or adjust any of the direct-connected implements with just a finger-tip touch on either of the small levers conveniently positioned on the steering post.

Regular Equipment

Engine: Choice of four-cylinder 3 x 4-inch gasoline or distillate engine—distillate equipment includes radiator shutter. IH magneto. Variable-speed governor. Oil filter with replaceable element. Oil bath type air cleaner.

Chassis: Four-speed transmission. Upholstered seat. Foot operated differential brakes. Fenders. Quick-change vertically adjustable drawbar. Non-adjustable front axle.

Wheels and tires (as ordered):

Front tires	Rear tires
4.00 x 15, 4-ply	7.00 x 24, 4-ply
5.00 x 15, 4-ply	9.00 x 24, 4-ply
7.50 x 16, 4-ply	9-24, 4-ply
	10-24, 4-ply
	11-24, 4-ply

Special Equipment

Belt pulley and power take-off. Drive hub (for operating planter seed-plate or fertilizer drive). Swinging drawbar. Exhaust muffler. Radiator shutter. Electric starting and lighting. Collector pre-cleaner for air cleaner. Air pipe extension. Pneumatic tire pump. Wheel weights, front and rear. Spark arrester. Adjustable tread front axle. Heavy-duty adjustable front axle. Farmall Touch-Control. Adjustable tread front wheels.



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Farmall Super-A Tractor



Riding Comfort

Riding comfort has been given top consideration in the design of the seat on the Farmall Super-A tractor. It is large. It holds the operator—snugly, comfortably. The result is a smooth, easy ride all through the day. Also, thought has been given to the differences in the size and weight of individuals. It takes only a moment to move the seat forward or to the rear. Then, if the operator is heavy, just tighten the set screws, one on each side of the seat, and the springs take on additional stiffness. Loosening the set screws gives the seat a softer spring.

Culti-Vision

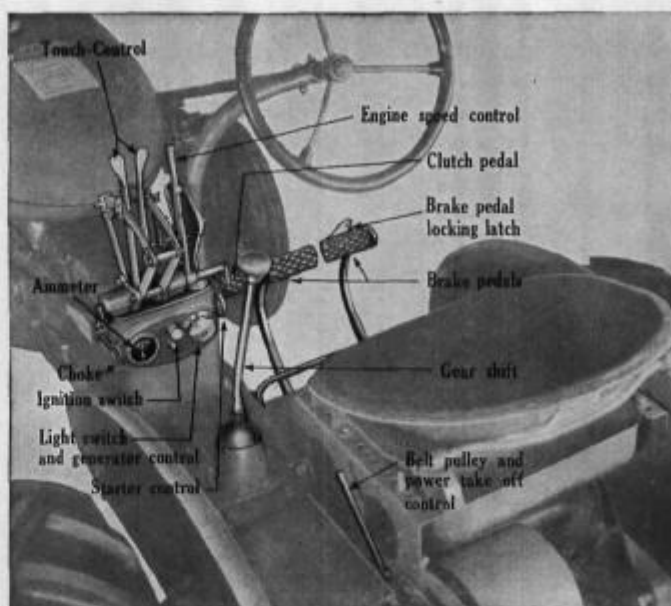
High-speed, accurate work demands unobstructed vision. The seat, offset to the right; the streamlined design of the tractor; and forward-mounted implements that are reduced to the bare essentials: these three features add up to give the operator clear, unobstructed vision. This clear vision permits the operator to see all the front-mounted implements at work as well as the row ahead. He can travel swiftly down the row—even rows of tiny seedlings—and do a close, clean cultivating job.

High Maneuverability

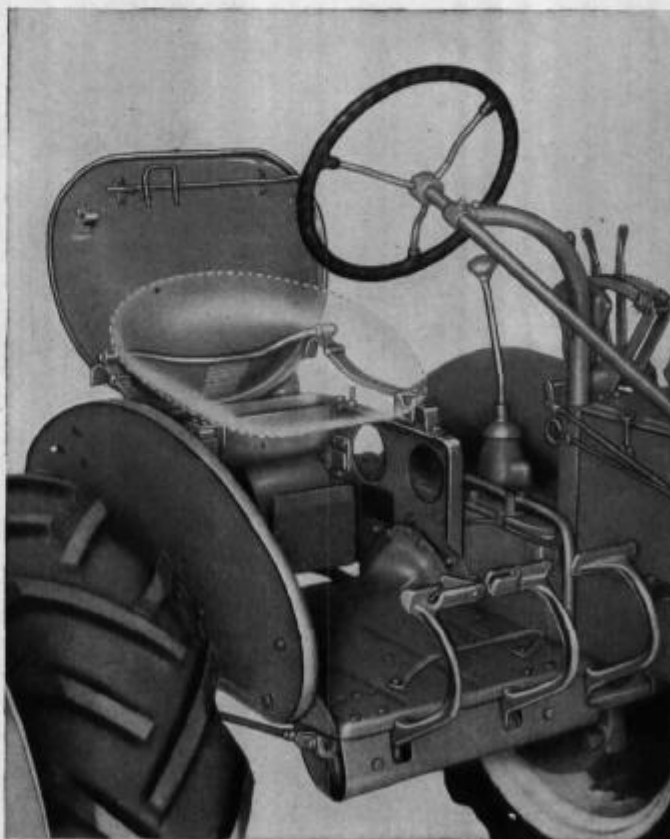
Large tractor roominess has been built into the Farmall Super-A. The platform is large enough to give the operator plenty of leg room when he is seated, and when standing he has a stable platform. This feature assures greater ease of operation—more work done with less effort. The clutch and brake pedals are convenient to the operator's feet—right at the tip of his toes—ready to respond to the slightest touch. Also, the two brake pedals can be latched together for equal braking when traveling at high road speeds. And, just a flip of the locking-latch and the rear wheels can be braked independently for making pin-point turns in the field. Turns can be made within a circle with a 9-foot radius.

Finger-Tip Controls

The gear shift lever is right at the spot where the operator would normally drop his left hand from the steering wheel. It is only slightly farther for the choke control, the magneto switch, and the engine throttle. And, when the Farmall Super-A is equipped with the Farmall Touch-Control, the Touch-Control levers are right next to the throttle. All tractor and implement controls are at the operator's finger tips. The ammeter (when installed) and the oil gauge can be read from the driver's seat.



Illust. 1—Controls on the Farmall Super-A are right where the operator wants them. The engine speed control and Farmall Touch-Control are together, easily manipulated by one hand. Other hand controls are just a few inches away. The brake pedals and the clutch pedal are right at the operator's toes.



Illust. 2—The large, roomy seat is of the swing-back type. It is a simple matter to swing the seat back so that the operator has plenty of room to stand.



Farmall Super-A Tractor



Balanced Steering

Oil bathed worm and gear sector steering contribute greatly to ease of operation. A finger tip is enough to do the steering — even when the going is rough. Maintenance is reduced to a minimum. Spring-loaded oil seals keep the dirt out and the oil in.

A Speed for Every Job

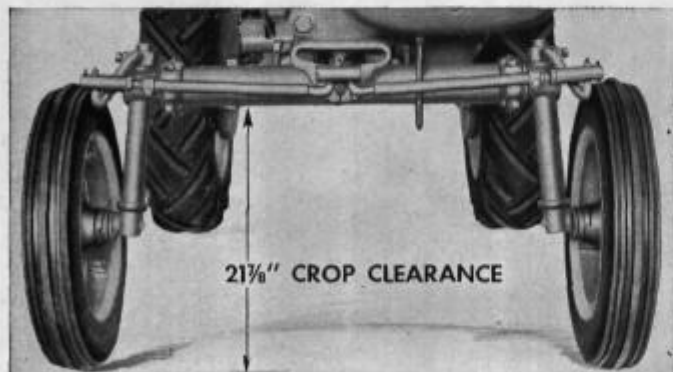
Farmall Super-A tractor speeds in miles per hour, based on rear wheels equipped with 9-24, 4-ply tires, are as follows:

First (low).....	2 $\frac{3}{8}$
Second.....	3 $\frac{5}{8}$
Third.....	4 $\frac{7}{8}$
Fourth (high).....	10
Reverse.....	2 $\frac{7}{8}$

Using the variable-speed governor in conjunction with the gear shift lever, the operator can select an even greater range of speeds. There is a speed for every type of operation and soil condition . . . just the right speed for maximum efficiency.

Ample Crop Clearance

Crop clearance — 21 $\frac{7}{8}$ inches — permits the operator to cultivate his crops all through the critical growing season. Weeds can be kept to a minimum until the crop has a head start . . . even in such high crops as corn, sorghum and cane. And in lower growing crops the operator can stay right in the field all through the season . . . cultivating, hilling and harvesting.



Illust. 1 — Crop clearance is ample — 21 $\frac{7}{8}$ inches, the full width of the axle.

Adjustable Wheel Treads

The regular front axle on the Farmall Super-A tractor has a fixed tread of 43 inches which accommodates most farming operations. Available as special equipment is a wide-tread front axle which is adjustable in 4-inch increments from 44 to 64 inches. Adjustable front wheels (special equipment), used in conjunction with the



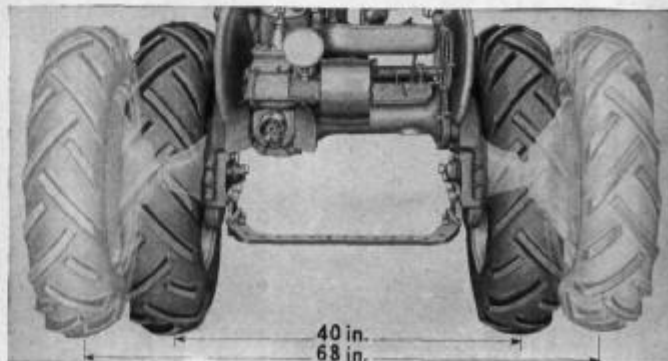
Illust. 2 — Short turning radius gives maximum maneuverability. This feature is especially important when cultivating point rows on the contour.

adjustable front axle, permit various combinations ranging from 40 $\frac{3}{4}$ to 70 inches.

The rear wheels are adjustable in 4-inch increments ranging from 40 to 68 inches.

Lift-off Hood

The hood on the Farmall Super-A tractor can be lifted off which facilitates periodic maintenance. All the operator has to do is pull down on the spring fasteners and the hood can be lifted off.



Illust. 3 — The rear wheel treads are adjustable in 4-inch increments from 40 to 68 inches.



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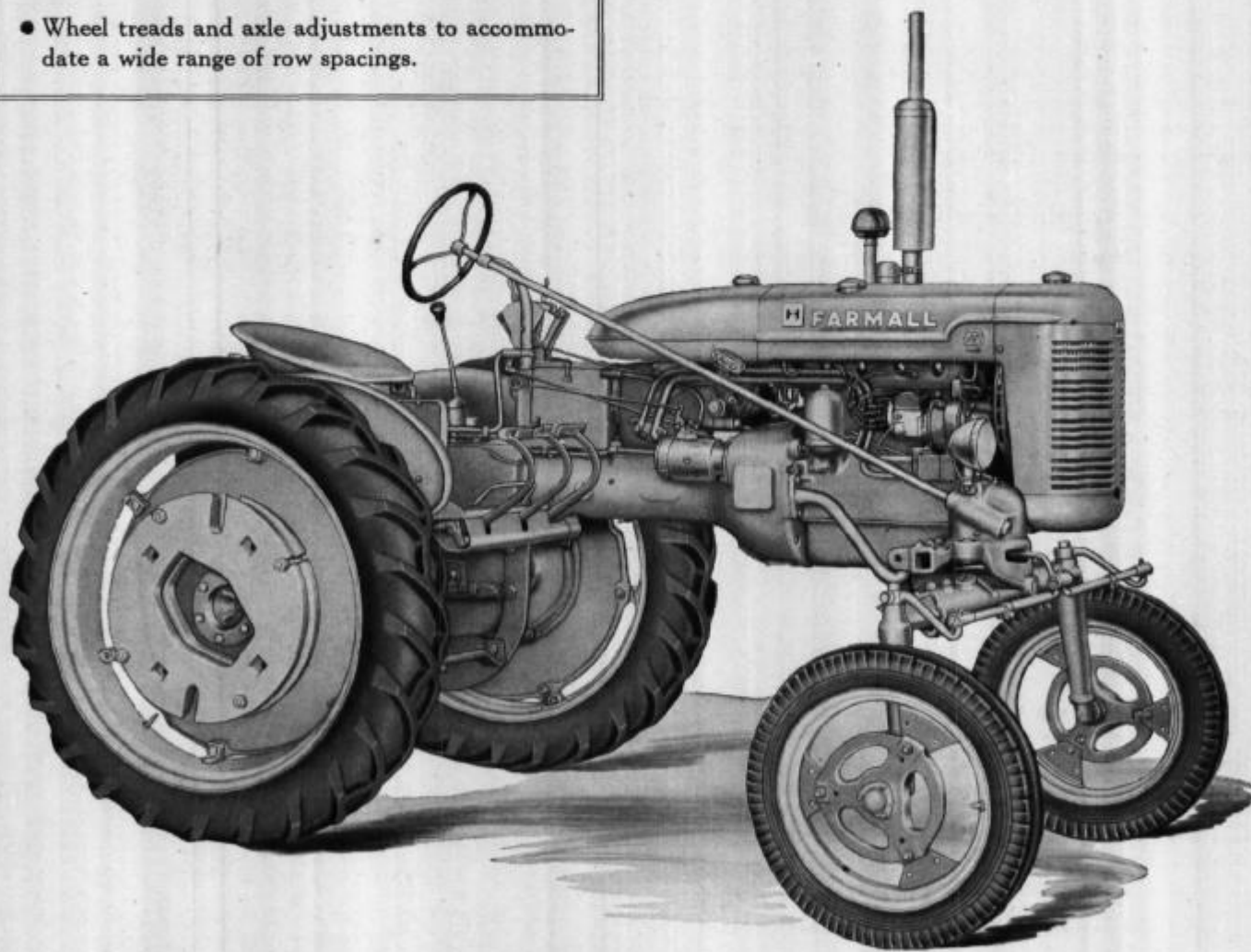
Farmall Super-AV Tractor



- A high-clearance tractor for crops on high beds . . . and an ideal auxiliary unit for the man who owns a Farmall HV or MV tractor.
- Built to achieve the maximum in rugged efficiency . . . riding comfort . . . operating economy.
- 4-in-1, all-purpose power . . . to push front-mounted implements . . . to pull trailing implements . . . power take-off to operate implement mechanisms . . . belt power for crop processing.
- Farmall Touch-Control for effortless raising, lowering and adjusting all direct-connected implements.
- Wheel treads and axle adjustments to accommodate a wide range of row spacings.

A High-Clearance Tractor

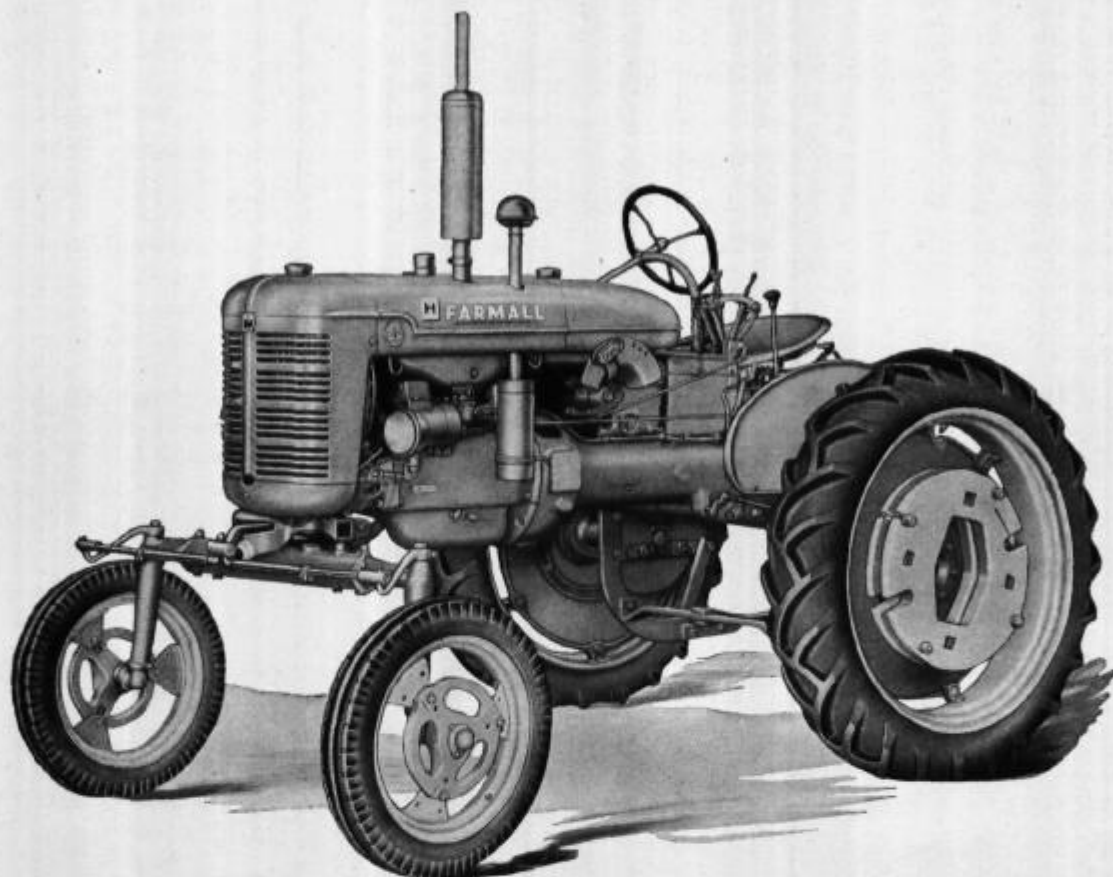
The Farmall Super-AV is the same as the Farmall Super-A except that it has larger wheels which give six inches of extra crop clearance for working in crops grown on high beds. It is the ideal tractor for cultivating crops, such as asparagus, which are cultivated continuously until the plants have reached considerable height. Because there is no change in the transmission the larger wheels give the Farmall Super-AV about 25 percent higher speeds in all gears. The front axle is adjustable to give treads of 44 to 68 inches and the rear wheels are adjustable to give treads of 48 to 68 inches by 4-inch increments.



Illust. 1—The Farmall Super-AV tractor is shown here equipped with Farmall Touch-Control, starting and lighting, and muffler attachments. These attachments, which are listed as special equipment, are priced separately to give the customer his choice.



Farmall Super-AV Tractor



Illust. 1 — The Farmall Super-AV tractor is shown here with Farmall Touch-Control, starting and lighting, muffler, wheel weights, and swinging drawbar. This is a high-clearance tractor especially adapted to operation on high beds or any tall-growing crop.

Direct-connected Implements

The direct-connected implements designed especially for the Farmall Super-AV tractor are the AV-193 rear-mounted moldboard plow; the AV-144 forward-mounted, one-row, cotton and corn cultivator; the AV-170 one-row, forward-mounted, combination planter; the AV-2 cane tools; and the AV-51-A fertilizer attachment. The tractor can also be used for trail-behind implements in sizes corresponding to the horsepower of the tractor.

Regular Equipment

Engine: Four-cylinder 3 x 4-inch gasoline or distillate engine. Distillate equipment includes radiator shutter. IH magneto. Variable-speed governor. Oil filter with replaceable element. Oil bath type air cleaner.

Chassis: Four-speed transmission. Upholstered seat. Foot-operated differential brakes. Fenders. Quick-

change vertically adjustable drawbar. Adjustable front axle.

Wheels and Tires (as Ordered):

Front tires	Rear tires
4.00 x 19, 4-ply	8-36-in., 4-ply
	9-36-in., 4-ply

Special Equipment

Belt pulley and power take-off. Drive hub (for operating planter seed-plate or fertilizer drive). Swinging drawbar. Exhaust muffler. Radiator shutter. Electric starting and lighting. Collector pre-cleaner for air cleaner. Air pipe extension. Pneumatic tire pump. Wheel weights, front and rear. Spark arrester. Farmall Touch-Control.



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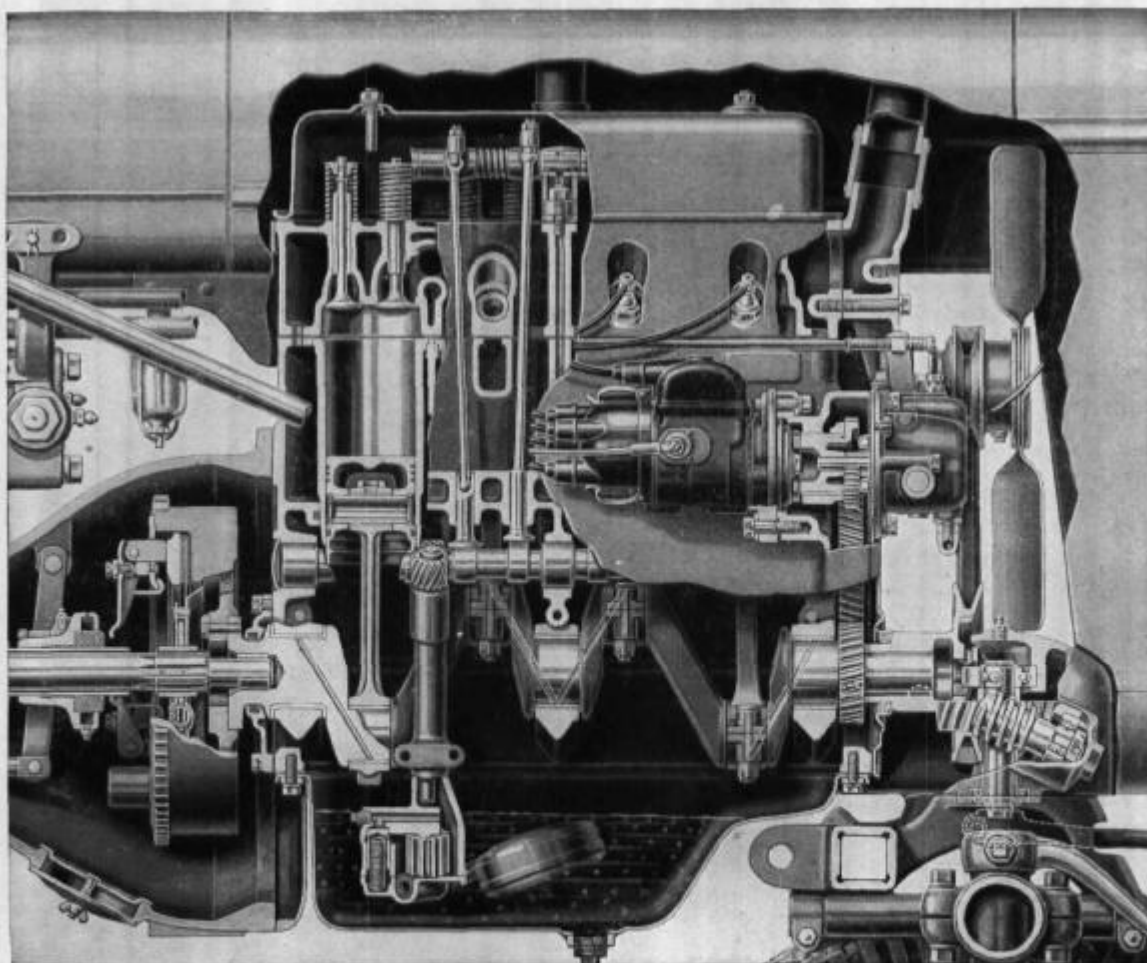
Farmall Super-A and AV Engine

- | | | |
|-------------------------------------|--|---|
| ● Precision-built, quality product. | ● Efficient cooling system. | ● Protected against dust, dirt and water: |
| ● Choice of gasoline or distillate. | ● Heavy-duty, long-life crankshaft. | Oil bath air cleaner. |
| ● Outstanding fuel economy. | ● Precision-fit, replaceable bearings. | Fuel strainer. |
| ● Valve-in-head design. | ● Variable speed governor. | Rawhide seals. |
| ● Replaceable cylinder sleeves. | ● Dependable IH magneto. | Replaceable element oil filter. |
| ● Pressure lubrication. | ● Ball and roller bearings. | |

An Improved Engine

Endless research, and continuous observation and experimentation by IH engineers have resulted in the perfection of a new cylinder head for the engine that powers Farmall Super-A and AV tractors. The newly designed chamber controls combustion, reduces heat

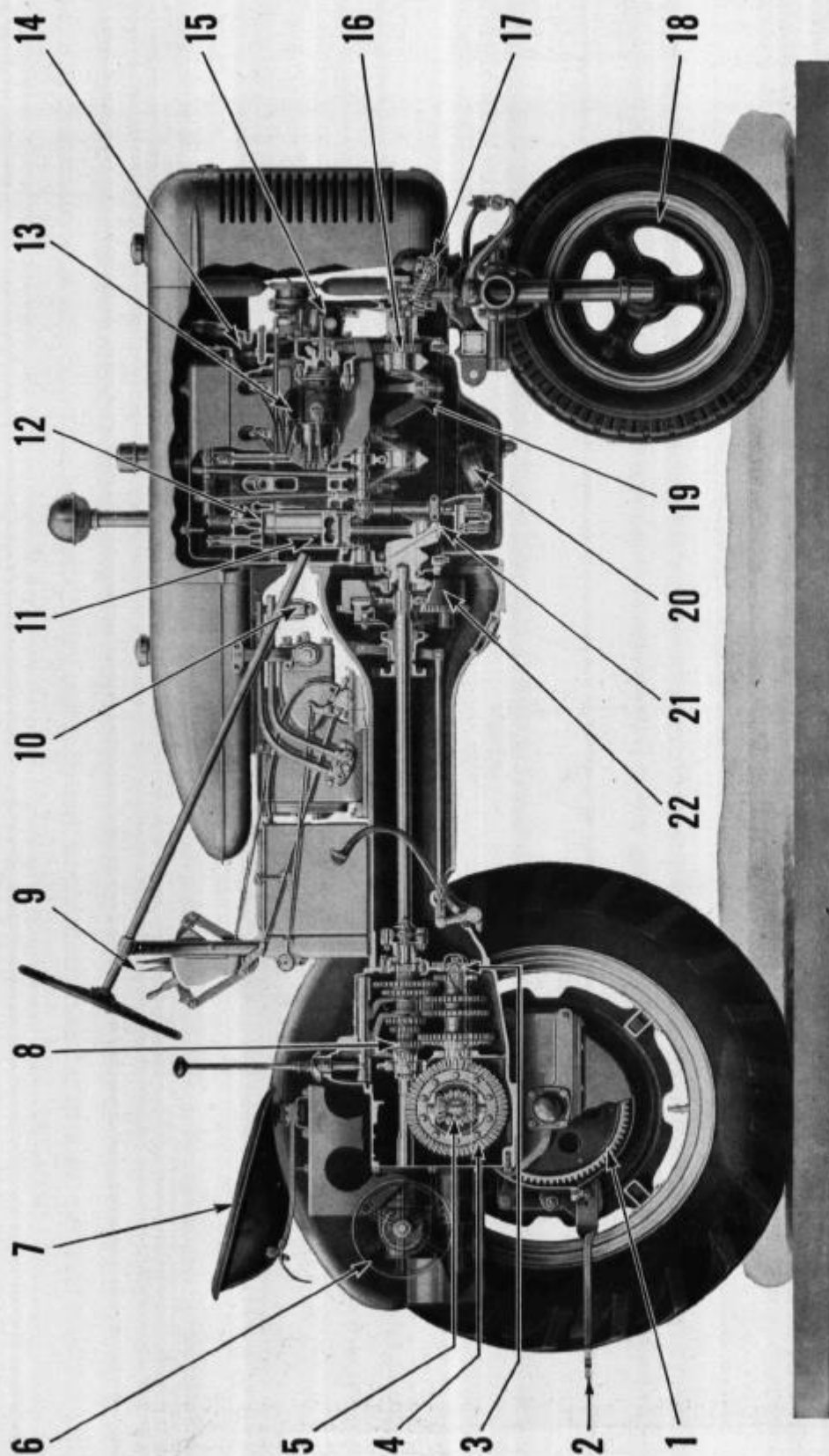
loss, and converts a greater proportion of fuel energy into useful work. This higher efficiency means that this engine delivers more power from a given quantity of fuel. A demonstration will quickly convince the operator that here is an engine that delivers a plus of power. It will handle each job easier and faster.



Illust. 1 — Cut-away view of the Farmall Super-A engine.



Farmall Super-A Tractor



Illust. 1 — Cross section of Farmall Super-A tractor.

1. Rear Axle Drive Gear — induction-hardened teeth, rotates on tapered roller bearings.
2. Drawbar — can be placed in forward position for connecting rear-mounted implements, and in this position can be raised or lowered by Touch-Control.
3. Ball and Roller Bearings — 29 ball and roller bearings are used in this tractor.
4. Bevel Pinion and Gear — precision-cut "zerol" gears, run in oil bath.
5. Differential — consists of two pinion and two side gears.
6. Power Take-Off and Belt Pulley — supplied singly or as a combination unit. Driven from transmission spline shaft. Shifter lever engages and disengages drive. Power take-off conforms to A.S.A.E. standards.
7. Seat — large, comfortable. Adjustable spring tension. Seat can be moved forward or to rear.
8. Transmission — Shafts rotate on free-rolling ball and roller bearings mounted in a one-piece case. Close tolerances permit gear teeth to make full, even contact. Gear teeth and spline shaft are electric-induction hardened.
9. Farmall Touch-Control — provides hydraulic power at operator's fingertips for making all important operating adjustments.
10. Fuel Strainer — includes dirt-retaining fine mesh screen and glass sediment bowl . . . easily removed for cleaning.
11. Replaceable Cylinder Sleeves — inexpensively restore worn engine to new efficiency. Pistons have three compression rings and one oil control ring.
12. Valve-in-Head Design — gives maximum power and economy. Valves are corrosion-resistant, chrome nickel alloy.
13. Magneto — complete, self-contained unit. Impulse coupling assures a hot spark for starting.
14. Cooling System — efficient, thermo-siphon type.
15. Variable-Speed Governor — instantly adjusts engine power output to meet load requirements and maintains uniform engine speed.
16. Timing gear train — hardened-steel gears, helical type for quiet operation.
17. Steering gear — worm-and-gear type, works in an oil bath. Spring-loaded leather seals.
18. Front Wheels — rotate on tapered roller bearings sealed against dirt by felt washers and spring-loaded oil seals.
19. Crankshaft — heavy, accurately balanced crankshaft . . . electrical-induction hardened. Rotates on precision-built, steel-backed, babbit-lined bearings. Sealed at each end to keep oil in and dirt out. Drilled for connecting rod bearing pressure lubrication.
20. Oil pump and floating intake — A gear-type pump with regulating valve provides pressure lubrication to engine parts.
21. Connecting rods — steel I-beam drop forgings . . . fitted with replaceable bushings at upper ends, and precision-built, steel-backed, babbit-lined bearings at lower ends.
22. Flywheel — heavy, accurately balanced . . . provides smooth flow of engine power even under variable load. Flywheel equipped with single-plate, 9-inch, dry-disk, foot-operated clutch.



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Farmall Super-A

Three Attaching Points

For All Implements



Permits Quick-change from One Implement to Another

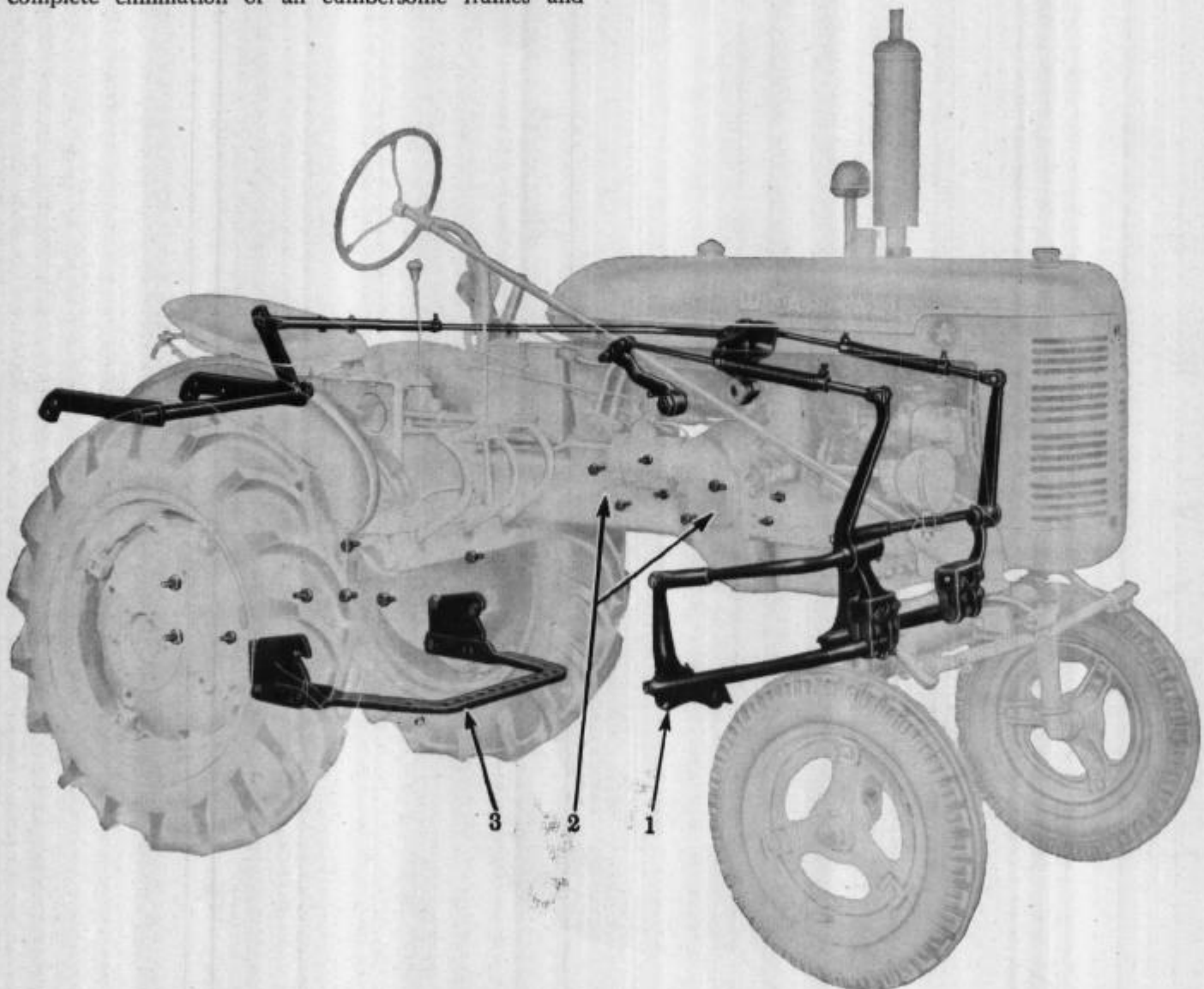
Today's emphasis on diversified farming makes it important to be able to change from one implement to another in minimum time. In keeping with this trend, three easy-to-reach attaching points have been devised for all direct-connected implements that mount on the Farmall Super-A tractor.

Simplified Implements

These three attaching points make possible the complete elimination of all cumbersome frames and

support wheels on the implements. Cultivators are simple tool bars with clamps for holding standards. Plows consist of a beam, colter and bottom. This new simplicity has been designed into the entire line of implements for the Farmall Super-A tractor.

The results are low cost, ruggedly simple implements that can be changed in a matter of minutes. Highly diversified farming can be carried out without increasing operating costs and machine investment.



Illust. 1 — No. 1 indicates the Universal Mounting Frame. This frame can be slipped onto the tractor in just a matter of minutes. Once it is in place, it need not be removed. No. 2 identifies the Tractor Mounting Pads. After the implement is slipped into place, the self-locking bolts hold the implement securely. No. 3 identifies the Reversible Drawbar. The illustration shows the drawbar in the forward position. It is a simple matter to loosen the bolts that hold it in place and move it to the rear where it serves as a conventional drawbar.

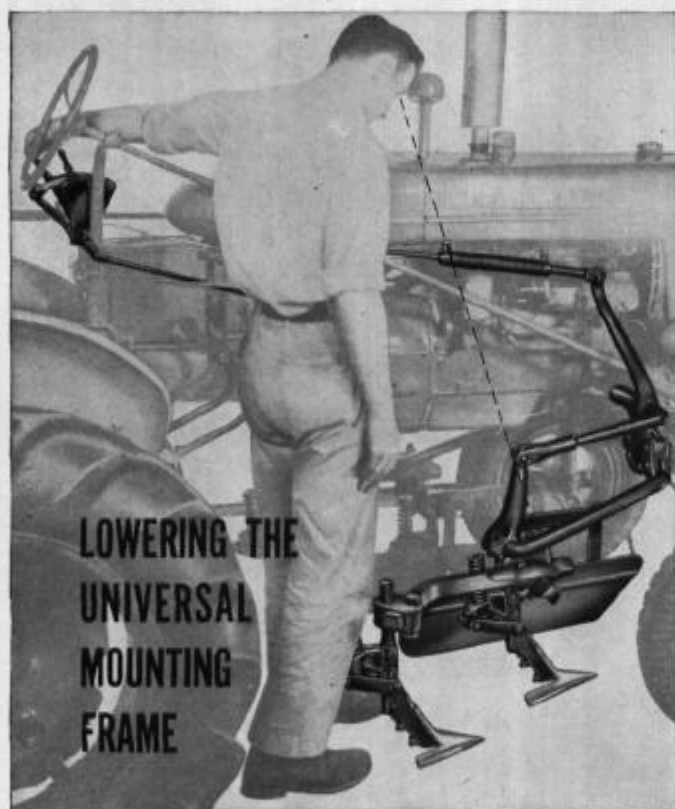


Farmall Super-A
Three Attaching Points
For All Implements (Continued)



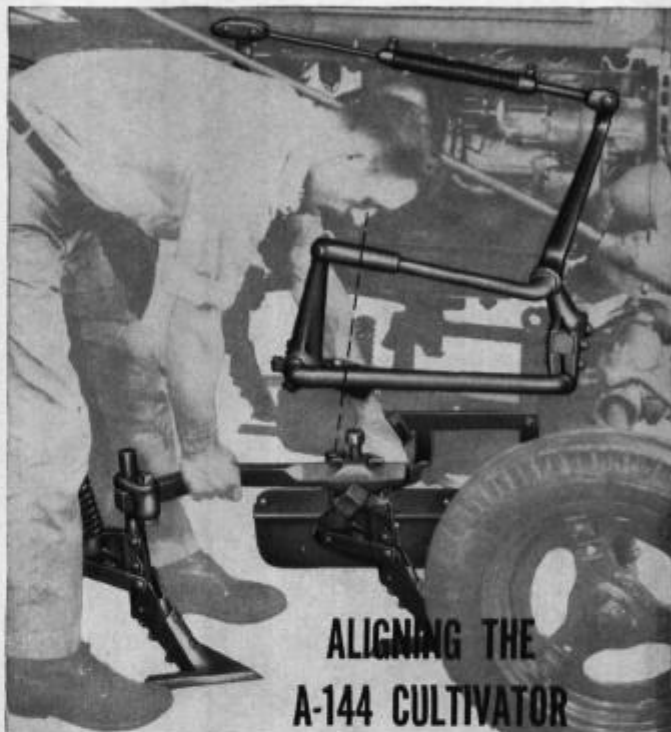
Universal Mounting Frame

The Universal Mounting Frame is used to attach all front-mounted implements. Just a twist of a wrench on two taper-faced nuts and the implement can be slipped in or out of the keyhole slots. In addition, parallel action of the Universal Mounting Frame permits all implement tools to retain the proper pitch regardless of the depth at which they operate.



Illust. 2—Lowering the Universal Mounting Frame with Farmall Touch-Control. Attaching and detaching implements is a simple one-man operation.

Illust. 3—The third operation in attaching the A-144 cultivator is simple and easy. All the operator has to do is apply the wrench and tighten the taper-faced nut which is pivotally attached to the tool bar of the cultivator.



Illust. 1—Aligning the right hand half of the A-144 cultivator with the Universal Mounting Frame gang-head. Notice that the cultivator need not be held in place. All that is necessary is to slide the implement unit along on the ground until the nut lines up with the slot in the gang-head.



Farmall Super-A

Three Attaching Points

For All Implements (Continued)



Tractor Mounting Pads

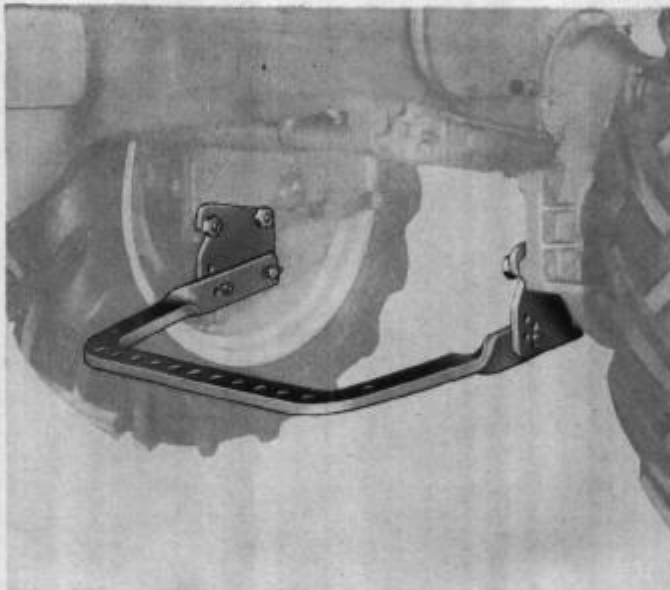
Easy-to-reach, taper-faced nuts or cap screws in the Tractor-Mounting Pads, assure at all times, that the slotted slip-on brackets of the implements are precisely positioned and rigidly attached to the tractor. No matter how often the implement units are removed and

then replaced on the tractor, they are always precisely relocated in the same position. This is because the slotted slip-on brackets have tapered holes which match the taper on the nuts.

Reversible Drawbar

The drawbar is an integral part of the tractor. Loosening, then retightening four taper-faced nuts is all that is necessary to reverse the position of the drawbar for attaching rear-mounted or trail-behind implements.

The drawbar is quickly and easily adjusted to four fixed vertical positions within a range of $11\frac{1}{4}$ to $16\frac{7}{8}$ inches. In addition, the drawbar, when in the forward position, can be set to float and be controlled from the tractor seat.



Illust. 1—The drawbar is shown (above) in the forward position. Note that it is set stationary in the lowest hole. These four holes permit the operator to quickly and easily adjust the drawbar to accommodate most any implement that requires a stationary drawbar either in the forward or rear position. And, of course, it is only a matter of a minute to remove the two bolts so that the drawbar is free to float.



Illust. 2—(Left) Here the drawbar has been set "free floating" and is linked to the right hand power arm on the Farmall Touch-Control. With just a "fingertip touch" on the control lever, the operator can raise or lower the hitch point of the plow beam. He can do a better job . . . faster, easier.



Farmall Super-A

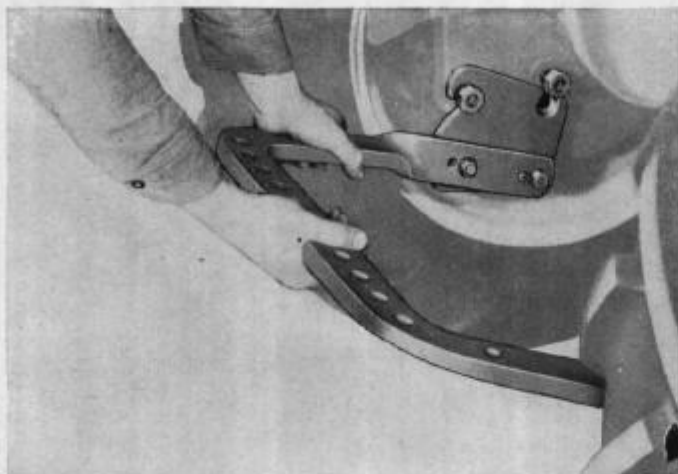
Three Attaching Points

For All Implements (Continued)

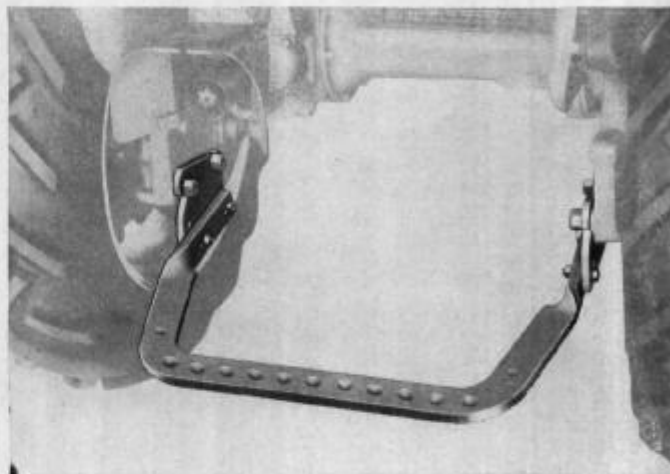


Reversible Drawbar

(Continued)



Illust. 1 — The operator is shown here slipping the drawbar mounting brackets onto the stud bolts on the Tractor Mounting Pads. After the brackets are in place, a quick twist of a wrench on the taper-faced nuts and the drawbar is held securely in place on the rear of the tractor where it may be used to attach most any trailing implement or machine.



Illust. 2 — The Reversible Drawbar is shown here in position on the rear end of the tractor. Thirteen holes permit the operator plenty of leeway in attaching any trailing implement or machine.

Universal Rockshaft

For raising and lowering rear-mounted implements there are available two Universal Rockshafts (special equipment) for the Farmall Super-A tractor. Both rockshafts attach to the tractor rear fenders and are activated by Farmall Touch-Control through a linkage which attaches to either of the left-hand Farmall Touch-Control power arms at the center of the tractor.

The Universal (rigid) Rockshaft which consists of a rockshaft, lift link and rockshaft bearings, is rigidly constructed so that the lift arms work in unison. This rockshaft will work on all implements requiring rear lifting means except the A-189 one-furrow, two-way moldboard plow.

The Universal (split) Rockshaft consists of a rockshaft, lift link and rockshaft bearings. In addition, it has a locking mechanism which consists mainly of two finger-tip latching levers. This Universal (split) Rockshaft is used for lifting the A-189 one-furrow, two-way moldboard plow. The finger-tip latching mechanism is used to drop the plow of the operator's choice into the plowing position while the split rockshaft holds the other in the raised position. This rockshaft, by the simple insertion of a bolt, can be made rigid. In this condition it can be used to lift any implement normally requiring the Universal (rigid) Rockshaft.



With the Universal (split) Rockshaft arms in the raised position—both plows are up. The operator has lowered the lift-arm . . .

Illust. 3 — With both arms up and the lift arm in the lowered position, the plows are held in the raised position by the finger-tip latching mechanism.



Farmall Super-A

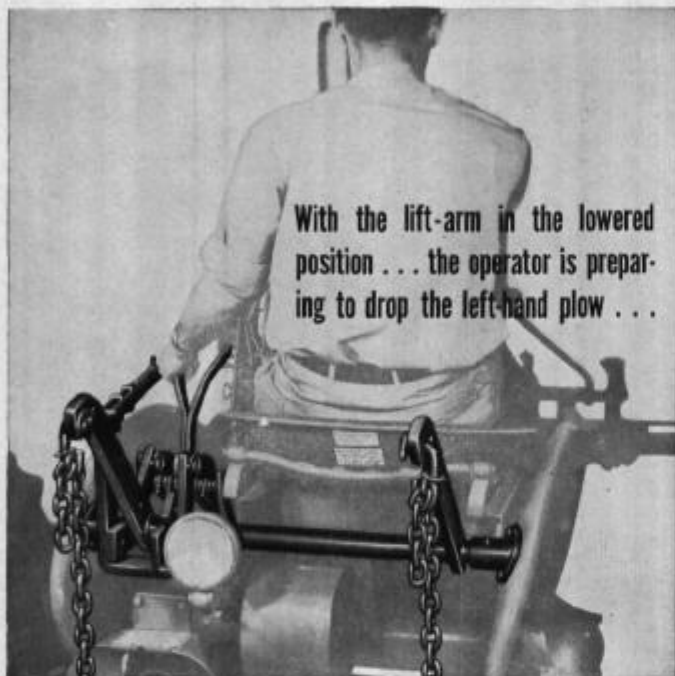
Three Attaching Points

For All Implements (Continued)



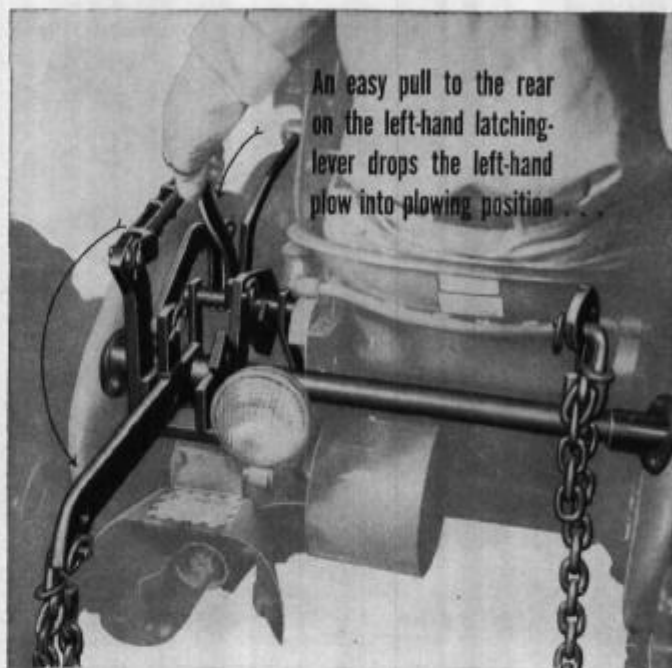
Universal Rockshaft

(Continued)



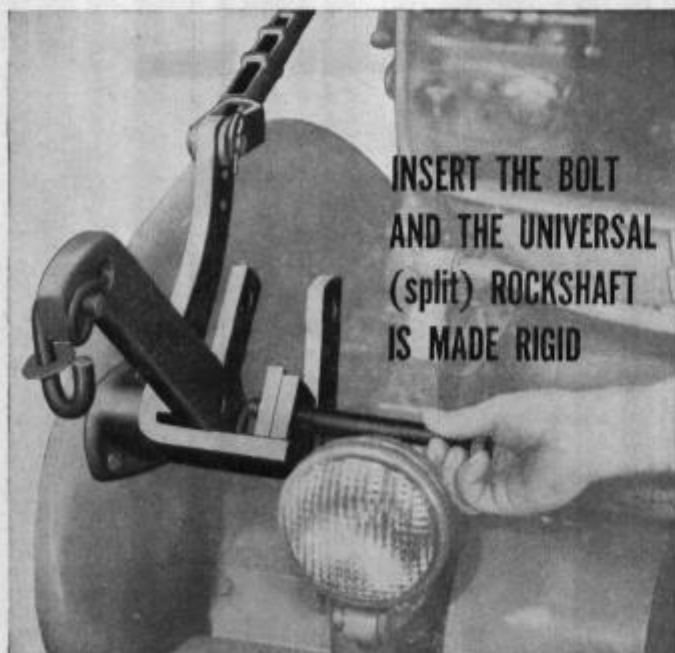
With the lift-arm in the lowered position . . . the operator is preparing to drop the left-hand plow . . .

Illust. 1 — The latching levers are convenient to the operator's left hand. He need not take his eyes off the furrow ahead.



An easy pull to the rear on the left-hand latching-lever drops the left-hand plow into plowing position . . .

Illust. 2 — With the plow in the lowered position, be sure there is plenty of slack in the lifting chain. The Universal Rockshaft is used only for lifting the plow. Depth adjustment is controlled from the Reversible Drawbar which is connected to the right hand Farmall Touch-Control power arm.



INSERT THE BOLT
AND THE UNIVERSAL
(split) ROCKSHAFT
IS MADE RIGID

Illust. 3 — To avoid the purchase of both rockshafts when the owner already owns the split rockshaft, holes have been drilled into the split rockshaft so that a bolt can be inserted.



UNIVERSAL (split)
ROCKSHAFT CAN
NOW BE USED FOR ANY
IMPLEMENT CALLING
FOR THE (rigid) ROCKSHAFT

Illust. 4 — The Universal (split) Rockshaft is shown here with the bolt inserted. In this condition both arms will work in unison.



Farmall Super-A

Three Attaching Points

For All Implements (Continued)



New Simplicity for One-Man Mounting

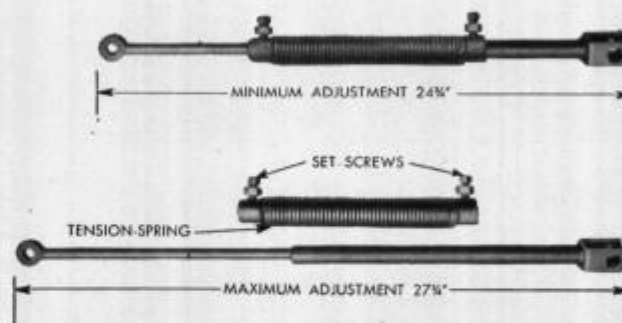
These new, simple implements can be mounted in a matter of minutes by one man. It is unnecessary to lose time waiting for a man to help the operator change from one implement to another. Maximum efficiency and a saving in time are the result.

Farmall Touch-Control Reduces Operating Fatigue

New, simplified implements which can be quickly and easily mounted by one man to any of the three easy-to-reach attaching points, coupled with the new, revolutionary Farmall Touch-Control, permit the operator to go into the field every day and all day and do better work. Operator fatigue is reduced to a minimum. With just a "finger-tip-touch" on the Farmall Touch-Control lever the operator can lift or lower the implement. He can make minute adjustments with just the flick of a finger. The result is a better job regardless of the implement he is operating. Another important feature is that grassed waterways can be safeguarded. Point rows are no longer a problem. A plan of soil conservation on the land can be more easily carried out.

Spring-tension Telescoping Control Rods Safeguard the Equipment

The control rod assemblies which link the Farmall Touch-Control power arm with the right and left hand units on the Universal Mounting Frame are adjustable from $24\frac{3}{4}$ to $27\frac{3}{4}$ inches. This adjustment is accomplished with large springs (Illust. 1) which are equipped with set screws. The control rod assemblies are of the telescoping type which permit one rod to operate inside the other. The control rod assemblies are held to their adjustments by the springs. These flexible connections safeguard the ground equipment, the Universal Mounting Frame, and the Farmall Touch-Control mechanism. Upon striking an obstruction the springs stretch and permit the rods to slide. As soon as the obstruction is passed the springs compress and the ground tools again take their proper level in the soil.



Illust. 1 — The spring-tension telescoping control rods create a positive linkage between the Farmall Touch-Control power arms and the Universal Mounting Frame. The spring connection safeguards the equipment when obstructions are encountered.

One Seed-plate Drive For All Forward-Mounted Planters



Illust. 2—Seed-plate drive.

To avoid duplication of parts, one seed-plate drive is all that is necessary for all forward-mounted planters. It attaches to the tractor rear housing and is driven from the inside end of the tractor rear axle. Drilled holes and a pin are provided which make it possible to slip various sized sprockets onto the hub.

Quick-adjustable Positive-Grip Cultivator Standard Clamp

This clamp is designed to hold the standard on the tool bar and at the same time to be fully adjustable. Just a twist of a wrench on the wedge-faced bolt nut and the standard with sweep attached can be moved from one point to another on the tool bar. Tightening the wedge-bolt nut securely locks the clamp in place.



Illust. 3—Cultivator standard clamp.



Farmall Super-A

Touch-Control Implements



Super-A Tractor

IMPLEMENT	UNIVERSAL UNITS REQUIRED			Acres worked in 10 hour day
	Universal Mounting Frame	Universal (rigid) Rockshaft	Universal (split) Rockshaft*	
PLOWING:				
A-193 Rear-mounted Moldboard Plow One-bottom, One-way		*		3 to 6
A-189 Rear-mounted Moldboard Plow One-bottom, Two-way			*	3 to 6
A-151 Rear-mounted Disk Plow Two-disk				4 to 7
A-12-D Rear-mounted Harrow Plow				8 to 10
A-16 Rear-mounted Middlebuster, One-row		*		8 to 14
A-6 Rear-mounted Disk Bedder		*		12 to 18
PLANTING:				
A-171 Forward-mounted Blackland Planter, One-row	*			10 to 15
A-172 Forward-mounted Runner Planter, One-row	*			10 to 15
A-218 Rear-mounted Checkrow, Corn Planter, Two-row		*		20 to 30
A-219 Rear-mounted Drill, Corn Planter, Two-row		*		25 to 36
A-222 Rear-mounted Hilddrop, Corn Planter, Two-row		*		25 to 36
A-674 Forward-mounted Vegetable Planter, Six-row	*			16 to 21
A-435 Rear-mounted Vegetable Planter, Four-row				11 to 20
A-635 Rear-mounted Vegetable Planter, Six-row				16 to 21
CULTIVATING:				
A-144 Forward-mounted Corn Cultivator, One-row	*	*		14 to 18
A-452 Forward-mounted Beet and Bean Cultivator, Four-row	*	*		11 to 21
A-647 Forward-mounted Vegetable Cultivator, Six-row	*			16 to 21
MOWING:				
A-21 Mower				21
HARVESTING:				
A-8 Beet Puller, One-row	*			8
A-10 Peanut Digger, Two-row	*			10 to 20
A-33 Peanut Shaker	*			

* The Universal (split) Rockshaft can be used on any implement calling for the Universal (rigid) Rockshaft.

Super-AV Tractor

IMPLEMENT	UNIVERSAL UNITS REQUIRED			Will Work on Tractors Equipped with 7.50-16 Pneumatic Front Tires
	Universal Mounting Frame	Universal (rigid) Rockshaft	Universal (split) Rockshaft*	
PLOWING:				
AV-193 Rear-mounted Moldboard Plow, One-bottom, One-way		*	Yes
AV-2 Cane Tools.....		*	Yes
CULTIVATING:				
AV-144 Corn Cultivator, One-row	*	*	No

* The Universal (split) Rockshaft can be used on any implement calling for the Universal (rigid) Rockshaft.





Farmall C Tractor

Illust. 1 — Farmall C tractor equipped with electric lights and starter, hydraulic shock-absorbing seat (regular), muffler, rear wheel weights and the famous Farmall Touch-Control.



- **The right size tractor for —**
Diversified-crop farms of 80 to 120 acres.
Larger farms requiring more than one tractor.
Large-scale vegetable growers.
- **Tricycle design —**
Permits two-row operation . . . "pin-point" turns.
- **Adaptable to all row spacings —**
Large, easy-to-adjust rear wheels on straight-line axles.
- **Smooth, 4-cylinder power —**
Choice of gasoline or distillate engine . . . maximum efficiency on either type of fuel.
- **Outstanding operating comfort —**
Hydraulic shock-absorbing seat.
Easy-to-reach controls.
Roomy platform with ample leg room.
- **Farmall two-way Touch-Control —**
Gives complete implement control . . . effortless, instantaneous, selective.
Two-way hydraulic power not only lifts the implement but forces it down holding it at the working depth selected.
- **Quick-change features —**
Tractor mounting pads.
Hexagon-shaped rear axle housing.
Universal Mounting and Hitch frames.

The Farmall C is the third-size tractor in the Farmall line. Its balanced power and weight fit the Farmall C for all work on diversified farms of 80 to 120 acres, for large-scale vegetable growers, and for larger farms which require more than one power unit to economically cultivate two rows of crops such as corn and cotton and narrower-spaced rows of beets and beans.

The tractor is of tricycle design with double front wheels. The rear wheels are easily adjusted from 47 to 80 inches on the straight-line rear axles. This feature makes the tractor adaptable to practically every row-crop spacing. Special rear axles provide adjustments up to 100 inches. A single-type front wheel or an adjustable-tread wide front axle (special equipment) are interchangeable with the double front wheels.

Regular Equipment

Engine: Gasoline or distillate engine — (distillate engine-equipped tractors include radiator shutter and heat indicator and are slightly higher in price). Thermo-siphon cooling. IH magneto. Oil-bath air cleaner. Replaceable paper-element oil filter. Foot-operated, 9-inch clutch. Variable-speed governor. Replaceable wet cylinder sleeves.

Chassis: Unit construction. Four-speed, spur gear transmission with spiral-bevel differential pinion and gear. Sector and worm steering gear. Hydraulic shock-absorbing seat. Foot-operated differential brakes. Adjustable-swinging drawbar.

Wheels and Tires (as ordered)

Front	Rear
Double front wheels with	7—36-in., 4-ply
4.00—15-in. 4-ply tires or	8—36-in., 4-ply
5.00—15-in. 4-ply tires	9—36-in., 4-ply
	10—36-in., 4-ply

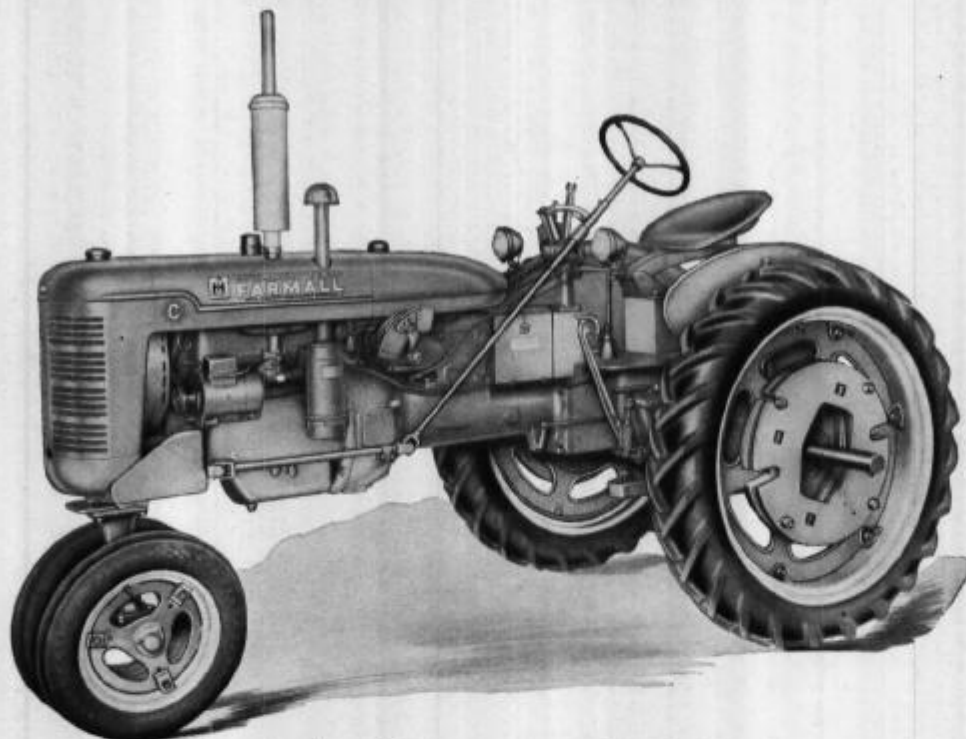
Special Equipment

Farmall Touch-Control. Electric starting and lighting. Power take-off. Belt pulley. Exhaust muffler. Radiator shutter. High altitude pistons—5 000 and 8 000 feet. Collector pre-cleaner for air cleaner. Air pipe extension. Tire pump. Wheel weights—front and rear. Rear wheel fenders. Spark arrester. Rear axles for 88 or 100-inch maximum treads. Single front wheels for 7.50—10-inch or 6.00—12-inch pneumatic tires. Adjustable-tread double front wheels. Wide front axle—adjustable tread. Stub shafts for driving planter and fertilizer hopper mechanisms.





Farmall C Tractor



Illust. 1 — Farmall C tractor as seen from the left side.

Capacity

The approximate amount of work which the Farmall C will do in a 10-hour day is as follows:

Moldboard Plows — One-furrow, 14 or 16-inch bottom (for average and heavy plowing) — 3 to 6 acres. Two-furrow, 12-inch bottom (for light and average plowing) — 6 to 9 acres. Capacities depend upon soil type and plowing depth.

Disk Plow — Two-disk (17-inch cut) — 4 to 6½ acres.

Harrow-Plow — Four disk (30-inch cut) — 7 to 11 acres.

Middlebuster — Two bottoms — 17 to 26 acres.

Disk-Harrow — 6-foot tandem — 25 acres.

Peg-Tooth Harrow — 4-section — 60 to 90 acres.

Grain Drill — 16 x 6 — 20 to 30 acres.

Planters — Corn and cotton, 2-row — 27 to 35 acres. Vegetable, 6-row — 20 to 27 acres.

Cultivators — Corn and cotton, 2-row — 30 to 40 acres. Vegetable, 6-row — 15 to 25 acres.

Mower — 7-foot cutter bar — 30 to 40 acres.

Combine — 5-foot, engine-operated — 14 to 20 acres.

Corn Binder — One-row, power-drive — 14 acres.

Potato Planter — 2-row — 20 acres.

Potato Digger — 1-row, power-drive — 10 acres.

Belt Power — No. 7 ensilage cutter. No. 6 hammer mill. Type B or D, 10-inch feed grinder. No. 30 corn sheller.

As is characteristic of the entire line of Farmall tractors, the Farmall C is noted for dependable, smooth-flowing power, outstanding ease and comfort, high traction efficiency, perfect visibility of work, adaptability for every job on diversified farms and for its outstanding operating economy. In addition it offers the famous new Farmall Touch-Control whereby implements are raised, lowered and completely regulated with a "finger-tip-touch" of a tiny lever. (For description of Farmall Touch-Control refer to page 9).

Illust. 2 — The operator rides in comfort on a wide, cushioned, shock-absorbing seat that takes the jolts and jars out of the rough-going.



Farmall C Tractor



Operating Comfort

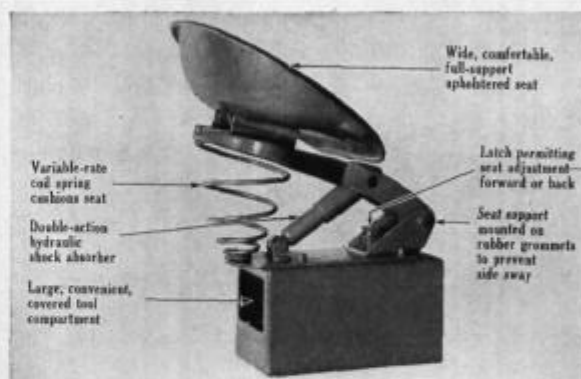
Not an item has been overlooked to give every comfort to the operator. The wide, comfortable, full-support, upholstered seat is mounted on a variable-rate coil spring and hydraulic shock absorber. This seat gives the operator feather-cushion comfort. It takes the jolts and jars out of the roughest going.

The seat location brings the operator high above the tractor so that he has a full view of the implements and the work being done. He is out of the dust and dirt zone and above the heat of the engine.

The seat can be easily adjusted forward and back four inches by simply pulling up on a spring latch under the seat and sliding the seat to one of four positions. When in the rear position there is plenty of room for the operator to stand if desired. The wide, roomy platform provides ample space for even the biggest operator to shift about and stretch his legs.

Easy to Operate

All controls are at the operator's fingertips and gauges are located where he can see them at a glance. The clutch and brake pedals are conveniently operated. The brake pedals are both on the same side of the tractor. They may be operated individually to obtain short pivot turns or they can be latched and operated together to obtain equalized braking on both rear wheels when traveling in the high road speed. The pedals can also be locked down, by means of a convenient latch, for parking or when performing belt work.



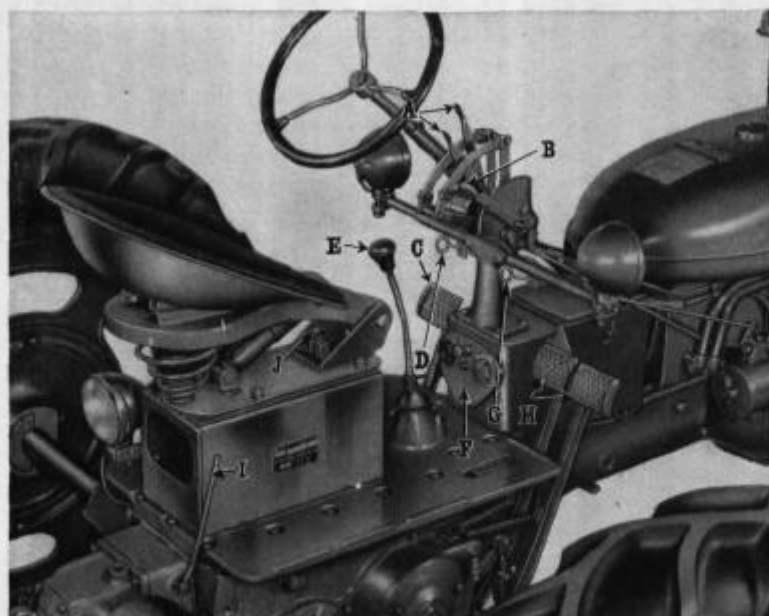
Illust. 2—The hydraulic shock-absorbing seat has many outstanding features.



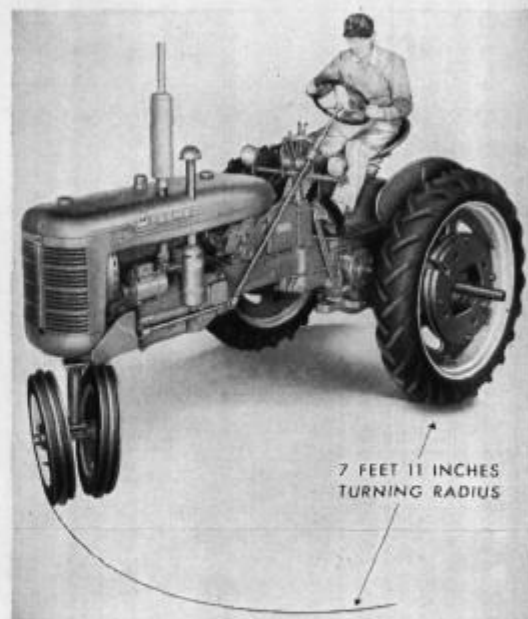
Illust. 3—The brake pedals are individually operable for making sharp turns.



Illust. 4—Brake pedals latched together and locked for parking or belt work.



Illust. 1—All controls are located in the most natural position for easy operation. A, Touch-Control levers. B, engine speed control lever. C, clutch pedal. D, choke control. E, gear shift lever. F, instrument panel with magneto switch, light switch and ammeter. G, starter control rod. H, brake pedals. I, power take-off shifting rod. J, seat adjusting latch.



Illust. 5—Quick, pivot-turning is a feature of the Farmall C.



Farmall C Tractor



Centralized Controls

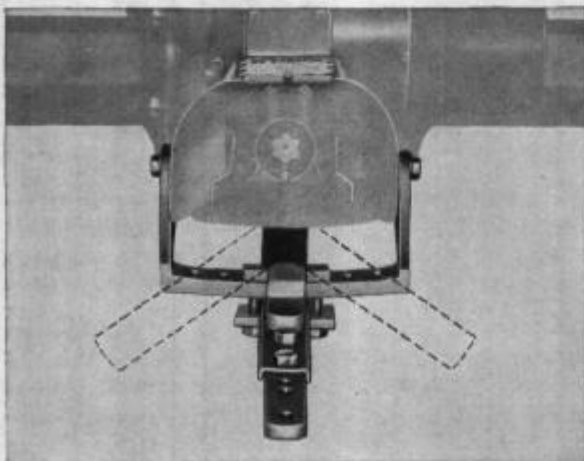
The two fingertip Touch-Control levers and the engine speed control lever are combined into one unit, located on the steering wheel column. This centralization of controls permits the operator to raise and lower the implement quickly and to control the engine speed while making the turn at the end of the field, all in quick, easy sequence and without lost motion.

Large, Easy-to-Adjust Rear Wheels

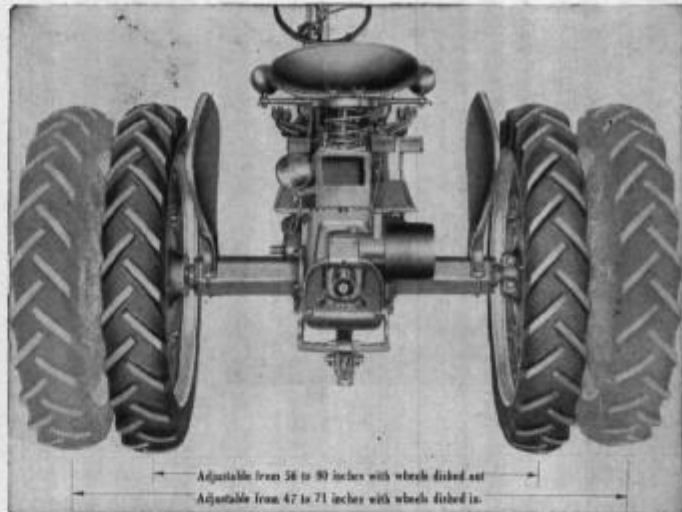
The rear wheels take 36-inch diameter pneumatic tires in sectional sizes from 7 to 10 inches. These large-diameter tires provide good flotation, minimize rolling resistance, and give good traction. The wheels are easily slid in or out on the straight-line rear axles to give treads from 47 to 71 inches with the wheels turned in and 56 to 80 inches with the wheels turned out. The 56 to 80-inch treads will meet most operating requirements so it seldom will be necessary to interchange the wheels. It is necessary only to loosen two bolts in the wheel hub, jack up the tractor, and move the wheels to the desired tread. Treads up to 88 inches maximum can be obtained by using longer axles, and treads up to 100 inches can be obtained by using longer axle carriers and axles. These are available as special equipment. When using the 100-inch axles the minimum tread obtainable is 64 inches.

The wheels can be equipped with either 7-36, 8-36, 9-36 or 10-36-inch tires, giving outstanding tractive performance and efficiency in any soil condition. The narrower tires are desirable when working narrow spaced row-crops.

Ground clearance under the rear axle housings is approximately 20½ inches when equipped with 9-36-inch tires.



Illust. 1 — The drawbar offers a wide range of vertical, lateral and lengthwise adjustments and may also be used as a swinging drawbar.



Illust. 2 — The rear wheels are adjustable from 47 to 80-inch treads with regular rear axle. Special long axles are available for use where wider treads are required.

Adjustable-Swinging Drawbar

The Farmall C is regularly equipped with a new type, adjustable-swinging drawbar. It is attached to the under side of the tractor rear frame so that the hitch bar pivot point is ahead of the rear axle. One of the outstanding features of this drawbar is that it does not have to be removed when the tractor is equipped with direct-connected implements. The tractor is always ready for drawbar work without first having to remove the mounted implement.

The drawbar provides a wide range of close hitch adjustments. The swinging hitch bar has a sturdy, heat-treated, wear-resistant, extension provided with five holes which permit lengthening the hitch point to any one of five different positions for a maximum of 11½ inches. The rear end of the drawbar frame is attached to the underside of the tractor rear frame by two cap screws. Two holes on each side provide vertical adjustments from 10½ to 21¼ inches with the hitch extension set in and tractor equipped with 9-36 tires. The hitch bar is free to swing through a 16¼-inch arc with extension set in, or it can be clamped to the drawbar frame. The hitch bar is easily removed by merely taking out a round-headed pin.

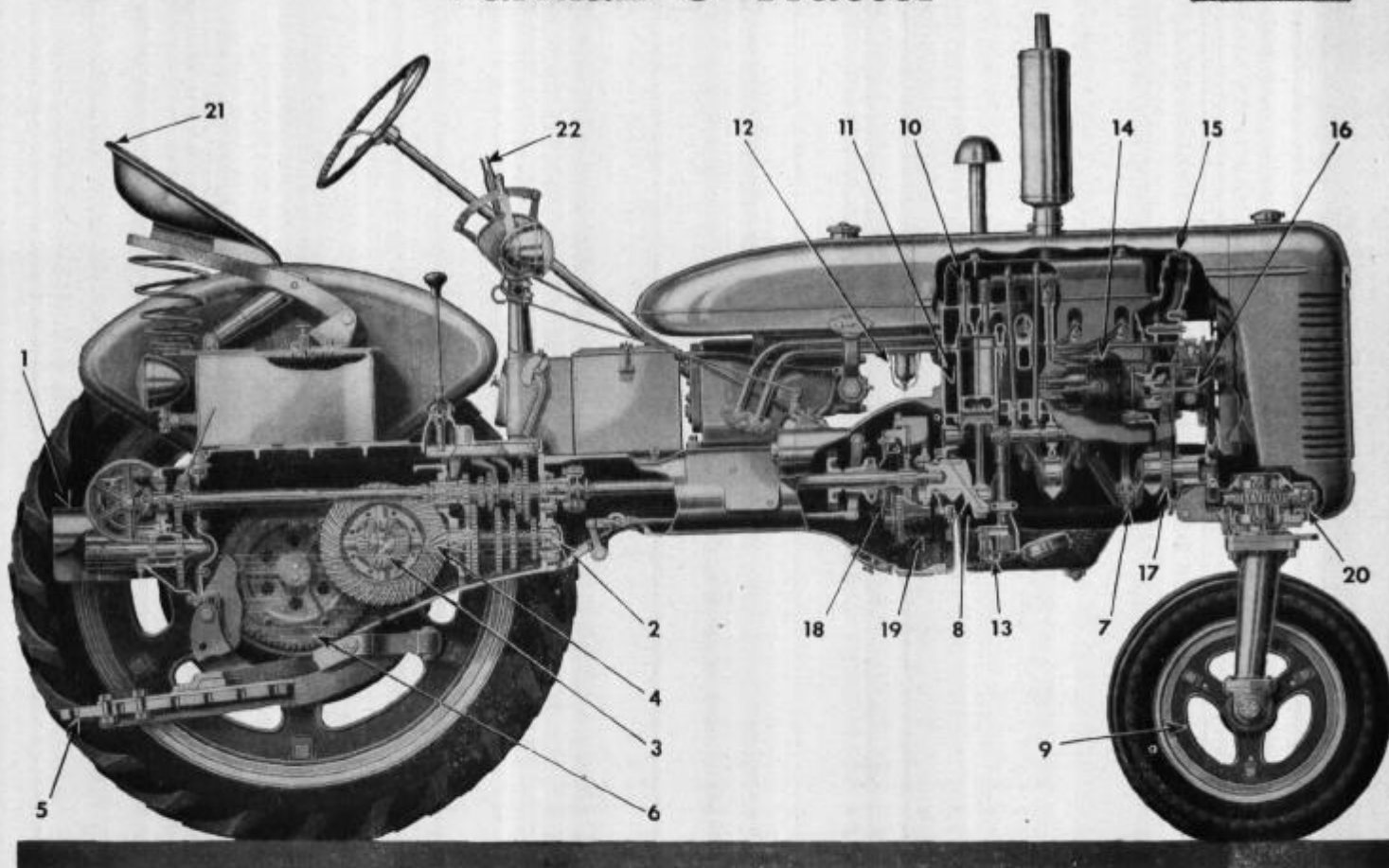
Differential Bevel Drive-Gear and Pinion

The Farmall C differential bevel drive-gear and pinion have spiral cut teeth. Gears of this type provide the best combination of smoothness, quietness, efficiency, strength and durability of any form of gearing for transmitting power.

The operating advantages of spiral bevel gears are due to the fact that the teeth engage gradually and several teeth are in contact at all times.



Farmall C Tractor



Illust. 1 — Cross-sectional view of Farmall C tractor.

1. Power Take-Off and Belt Pulley — supplied singly or as a combination unit. Driven from transmission spline shaft. Shifter lever engages and disengages drive so that control is by means of engine clutch pedal. Power take-off conforms to A.S.A.E. standards. Free-rolling ball bearings reduce friction. Spring-loaded oil seals.

2. Transmission — provides 4 speeds forward and one in reverse. Shafts rotate on free-rolling ball and roller bearings mounted in a one-piece case. Close tolerances permit gear teeth to make full, even contact. Engine power transmitted with minimum friction. Gear teeth and spline shaft are electric-induction hardened.

3. Differential — consists of four pinion and two side gears.

4. Bevel Pinion and Gear — precision-cut spiral bevel gears, run in oil bath, rotate on precision ball and roller bearings. Mounted in one-piece case which rigidly holds gears in perfect alignment, assuring full and correct tooth contact under all loads.

5. Drawbar — Drawbar frame attaches to underside of rear frame. Hitch bar pivots ahead of rear axle, assuring easy steering and short turn. Hitch bar is adjustable. Drawbar can be left in place when using direct-connected implements.

6. Rear Axle Drive — rugged, rear axle drive gear with induction-hardened teeth, rotates on two tapered roller bearings protected by high-grade, spring-loaded leather oil seals.

7. Connecting Rods — steel I-beam drop forgings, fitted with replaceable bushings at upper ends, and precision-built, steel-backed, babbitt-lined, replaceable bearings at the lower ends.

8. Crankshaft — heavy balanced crankshaft . . . electric-induction hardened. Rotates on precision-built, steel-backed, babbitt-lined replaceable bearings. Sealed to keep oil in and dirt out. Drilled for connecting rod bearing pressure lubrication.

9. Front Wheels — rotate on precision-tapered roller bearings, sealed against dirt by felt washers and spring-loaded oil seals.

10. Valve-in-Head Design gives maximum power and economy . . . readily accessible for inspection, adjustment and service. Valves are corrosion-resistant, chrome nickel alloy.

11. Replaceable Cylinder Sleeves inexpensively restore engine efficiency. Piston assemblies are equalized in weight to assure smooth, balanced operation. Each piston has three compression rings and one oil control ring.

12. Fuel Strainer — includes dirt-retaining, fine-mesh screen and glass sediment bowl . . . easily removed for cleaning. Added protection is a screen at entrance to carburetor.

13. Oil Pump with Floating Intake — gear-type pump provides pressure lubrication to engine parts. Oil intake, with screen, is free to float so that the pump draws oil from near surface where it is cleanest. Oil pressure regulating valve is part of pump.

14. Magneto — complete, self-contained unit. Impulse coupling assures a hot spark when starting.

15. Cooling System — simple, efficient thermo-siphon.

16. Governor — sensitive, variable-speed. Regulates quantity of fuel-air mixture entering engine. Instantly adjusts power output to meet load requirements and maintain uniform engine speed.

17. Timing Gear Train — hardened-steel gears, helical-type for quiet operation.

18. Clutch — single-plate, 9-inch, dry-disk, foot-operated . . . transmits engine power without grabbing or jerking.

19. Flywheel — heavy, accurately balanced . . . provides smooth flow of engine power, even under variable load.

20. Steering Gear — worm-type, roller-bearing mounted. Provides easy, quick-response steering. Operates in an oil bath.

21. Seat — hydraulic shock absorber, variable-rate coil spring and rubber grommet-mounted seat support take jars and jolts out of roughest going. Spring latch makes it easy to adjust seat forward or back.

22. Farmall Touch-Control provides hydraulic power at operator's fingertips for making all implement operating adjustments.



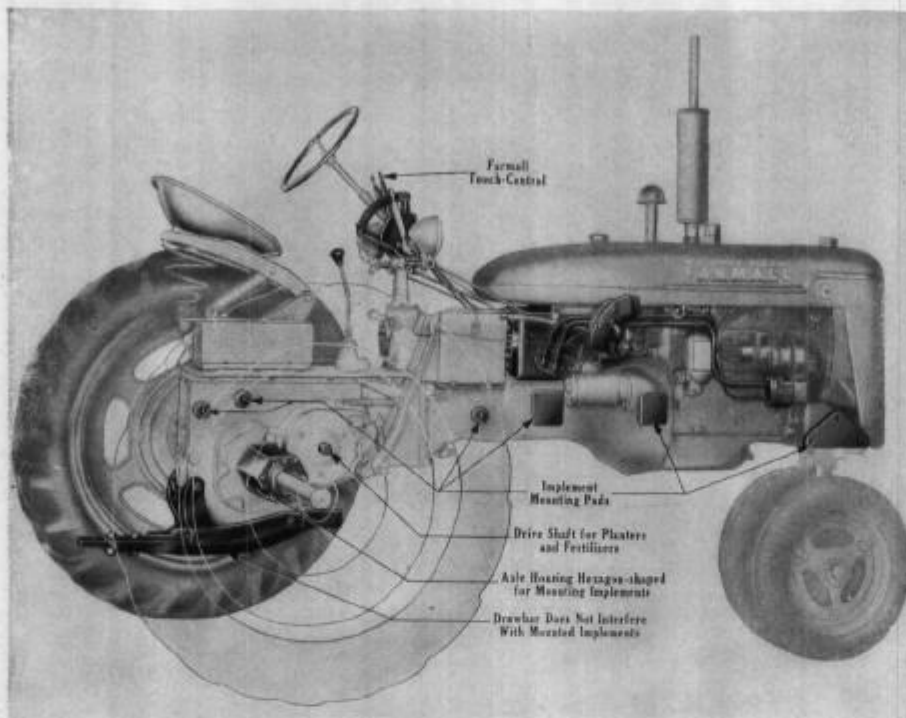
INTERNATIONAL HARVESTER

8-C

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Farmall C Tractor



Illust. 1 — Farmall C tractor showing Touch-Control and the features in-built or regularly supplied with the tractor for attaching and controlling mounted implements. The stub shaft for planter drives, however, must be ordered special.

TABLE OF FARMALL C DIRECT-CONNECTED IMPLEMENTS
(Indicating method of attaching and the approximate work capacity of each machine)

IMPLEMENT	Universal Mounting Frame Required	Will Work With Adjustable Wide Front Axle and 7.50-16 Pneumatic Tires	Attached Direct to —		Approx. Acres per 10 Hour Day
			Hexagon Axle Housing	Tractor Mounting Pads	
Plowing					
C-193 One-furrow moldboard plow.....		x		x	3 to 6
C-294 Two-furrow moldboard plow.....		x		x	6 to 9
C-189 One-furrow, two-way plow.....		x		x	3 to 6
C-151 Two-furrow disk plows.....		x (with special parts)		x	4 to 6½
C-12-D Harrow-plow.....		x (with special parts)		x	7 to 11
C-18 Middlebuster.....		No		x	17 to 26
Planting					
C-220 Checkrow corn planter.....		No		x	27 to 30
C-221 Corn drill.....		No		x	27 to 35
C-222 Hill-drop corn planter.....		No		x	27 to 35
C-271 Blackland cotton and corn planter.....	x	No		*x	25 to 30
C-272 Runner cotton and corn planter.....	x	No		*x	25 to 30
C-435 and C-635 Rear-mounted vegetable planters.....		Not recommended	x		14 to 20
C-674 Front-mounted vegetable planter.....	x	No			15 to 25
Cultivating					
C-244 Corn and cotton cultivator.....	x	No	*x		30 to 40
C-452 Beet and bean cultivator.....	x	No	*x		16 to 34
C-647 Vegetable cultivator.....	x	No			15 to 25
Harvesting					
C-8 Beet puller.....		x		x	5 to 8
C-21 Mower.....		x	x		30 to 40
C-11 Peanut digger.....	x	No			20 to 25
C-34 Peanut shaker.....		Not recommended	x		20 to 25

*Used in addition to Mounting Frame.



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Farmall C Tractor



A Full Line of Quick-Change Implements

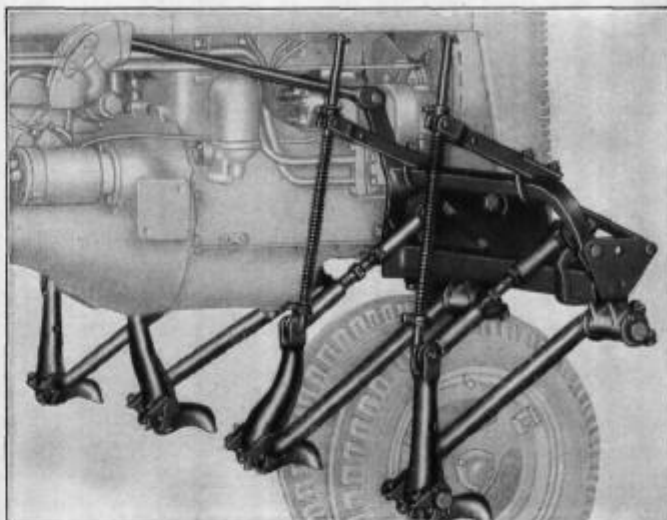
Available for the Farmall C is a full line of matched, quick-change implements, new and distinct in design. Each implement is a simple unit consisting only of the basic working parts. The implements are quick-change attached to either the Universal Front Mounting Frame, the tractor's hexagonal Rear Axle Housing or the conveniently-located tractor Mounting Pads. All implements are completely controlled by Farmall Touch-Control, either through the Universal Front Mounting Frame, by means of the Plow Rear Rockshaft, or directly from the Touch-Control power arms.

Universal Mounting Frame

(For Forward-Mounted Implements)

This frame consists of two units—one for each side. Each unit consists of a slip-on mounting bracket, a square tube to which are attached two parallel-acting arms, gangheads, and adjustable pressure-spring equipped control rods. The slip-on brackets have slotted tapered holes which are precisely and rigidly attached by tapered-head capscrews to the tractor front Mounting Pads. Two rods, attached to the Touch-Control power arms control the up-and-down movement of the gangheads through pressure springs. Farmall Touch-Control makes it possible to control the two frame units either independently or together. The type of control depends on which one of the two power arms is connected to the frame rods.

The parallel-action linkage is provided with adjustments in the top rods to change the pitch of the gangheads. Should the pivot points become loose due to wear they can be tightened by taking up on the bolts in the split bearings. This assures that the frames hold the working units in true alignment at all times.



Illust. 1 — Universal Mounting Frame for forward-mounted implements such as cultivators and planters.

Quick-Change

Forward-mounted implements are quickly and easily attached to the Universal Mounting Frame gangheads as shown in the illustrations below. Just slide the implement unit into position, lower the ganghead by Touch-Control until the tapered-face nuts on the unit are brought through the keyhole-shaped slots in the ganghead, then tighten the nuts. An important feature is that the parallel action of the frame permits all implement ground tools to retain the proper pitch in relation to the soil, regardless of their working depth. Once the tools are correctly set, they do not have to be readjusted each time the implement is removed and again attached.



Illust. 2 — The cultivator front gang assembly is easily positioned under the Universal Mounting Frame so that the attaching bolt lines up with the keyhole slot in the ganghead.



Illust. 3 — The ganghead is lowered by Touch-Control until the bolt and nut protrude through the keyhole slot.



Illust. 4 — A few turns of the wrench and the unit is rigidly attached to the Universal Mounting Frame. Other forward-mounted implements are attached just as easily.



Farmall C Tractor



Tractor Mounting Pads

These pads have tapped holes for inserting tapered-face cap screws and are an integral part of the tractor frame. They provide easy and convenient attaching points for various implement units. The tapered-face heads of the cap screws match the taper of the slotted holes in the slip-on brackets of implement units and in the mounting brackets of the Plow Mounting Frame. This tapered fit assures that every implement is precisely and rigidly locked in place. To change implement units,

it is only necessary to loosen the cap screws and the implement units and Plow Frames are free to be slipped off or on.

Hexagon-Shaped Rear Axle Housing

The hexagonal axle housing provides a convenient attaching point for various rear-mounted implements. All that is necessary is to slip the implement clamps around the hexagonal axle and secure them.



Illust. 1 — It's an easy matter to attach any of the Farmall C direct-connected plows. The plow pull bar is seated into indentations on the frame and is quickly secured by clamps and the nuts on the pivoting locking bolts.



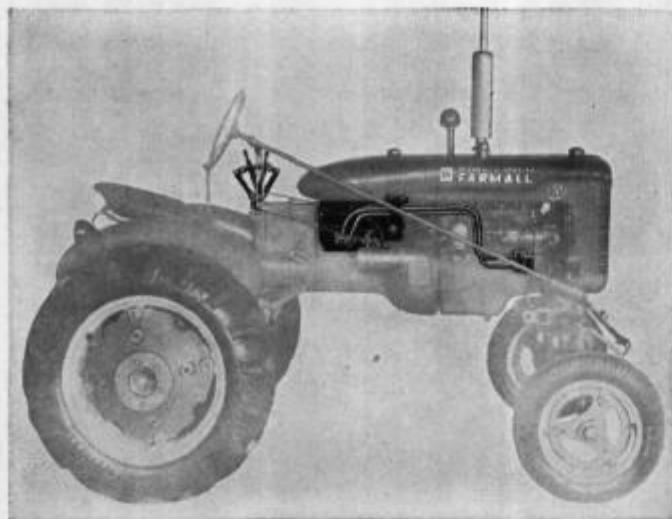
Illust. 2 — Cultivator rear sections as well as various other implements are quickly attached to the tractor hexagonal axle housing. Just slip the clamp around the axle and secure it by means of the locking screw.



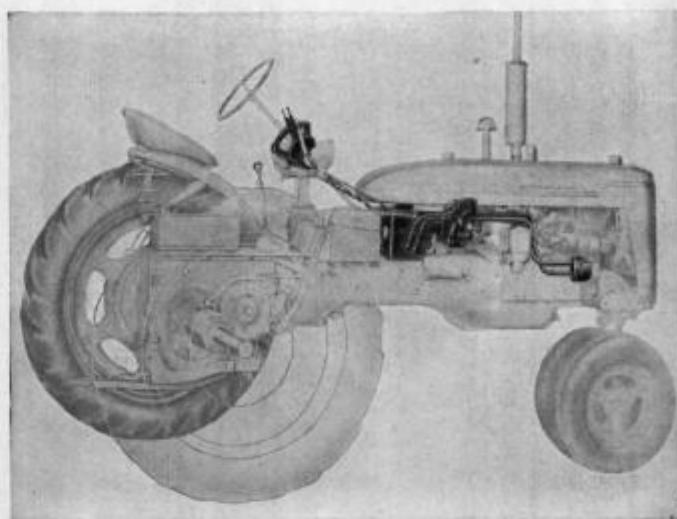


Farmall Touch-Control

For Farmall Super-A and C Tractors (Continued)



Illust. 1 — Phantom view of Farmall Super-A showing Touch-Control.



Illust. 2 — Phantom view of Farmall C showing Touch-Control.

Farmall Touch-Control is one of the greatest advancements in the history of farming. It provides effortless, instantaneous, selective *two-way* control of farm implements.

Up to 2000 pounds of hydraulic power is always on the job . . . flowing from the continuous-running, gear-type pump . . . through the double-cylinder hydraulic unit . . . direct to each power arm at the center of the tractor . . . *two-way* power that is instantly available at a fingertip touch of a tiny lever to *lift* the implement or *force* it down, whether the tractor is moving or standing still.

Gone are the days when the farmer must pull or heave at cumbersome levers. Now, with *two-way* hydraulic Farmall Touch-Control, the farmer can lift, lower and make the operating adjustments of all direct-connected implements with just a touch of his fingers.

Farmall Touch-Control not only assures instant response in the raising and lowering operations but also holds the implement at any selected working depth or position. Whether the operator wants to raise the implement all the way up, lower it, or adjust it in fractions of an inch, Touch-Control will perform the operation smoothly and efficiently, with no effort on his part except a fingertip touch on the control levers.

Available for Farmalls Super-A and C Tractors

The two smaller size Farmalls, the Super-A and C can be equipped with Touch-Control. The Farmall Super-A has two power arms on the left hand side (looking forward), and one on the right hand side. The Farmall C has two power arms on each side. Except for these differences, the working principles and the special features described herein apply equally to both tractors.

New Implements — Low In Cost

New Farmall Touch-Control implements have been designed in conformance with the latest and most efficient farming practices. These implements are simple yet sturdily built. There is a complete absence of heavy frames and cumbersome wheels and long, unwieldy levers. Just the bare essentials — those parts necessary to hold the ground tools in the working position — have been incorporated into these implements. And, equally important, these new and efficient implements, made possible by Farmall Touch-Control, are designed for quick-change. They can be mounted or demounted in a matter of minutes. The operator can change from one operation to another without wasting time. He can accomplish as many as four or five operations — plow, harrow, plant, cultivate, and even mow — all in a single day. Now, farmers can do easier, faster, better, more profitable farming than ever before.

Special Features

1. *Two-way hydraulic power* — Farmall Touch-Control is not a gravity drop. Hydraulic power, exerted on either side of each cylinder, lowers, lifts or adjusts the implement.
2. *Effortless control* — A fingertip touch on the control lever positions a valve which, in turn, releases hydraulic power to do the actual work. Whether the load is light or heavy, hydraulic pressure is exerted to do the work smoothly — efficiently.
3. *Calibrated control* — Adjustable indicators on the Touch-Control quadrant are easily aligned with the Touch-Control levers when the implement is set for the desired depth. Working adjustments, up or down from this position, can be made instantly and accurately.





Farmall Touch-Control

For Farmall Super-A and C Tractors (Continued)



Illust. 1 — Touch-Control levers for Farmall C tractor. A fingertip touch of the lever releases 2000 pounds at the power arms.



Illust. 2 — Touch-Control levers for Farmall Super-A. Short lever at rear is engine speed control lever.

Simple, effortless fingertip touch returns the control lever to the adjustable indicators. The implement assumes instantly and accurately the preselected depth. Adjustable stops are also provided to control the height to which the implement can be raised.

4. Instantaneous control — The moment the engine starts, 1200 pounds per square inch of power is ready to exert itself on either cylinder. This gives 2000 pounds pressure at each power arm. A fingertip touch on the control lever causes the valve-controlled mechanism to instantly release a flow of hydraulic power. The implement moves swiftly and surely to the exact position dictated by the control lever.

5. Selective control — Farmall Touch-Control provides individual control of the right and left-hand implement sections, or, the front and rear sections. These delayed lift and selective lift features make it possible to cultivate all the ground right up to the end of the row. Point rows are no longer a problem. Grassed waterways are easily safeguarded. Obstructions in the field are easily avoided.

6. Controls centrally located — All controls are positioned on the steering post. With just the slightest movement of his arm the operator can drop his hand from the steering wheel to the Farmall Touch-Control levers or to the engine speed control lever — no fumbling below the seat or reaching behind his back.

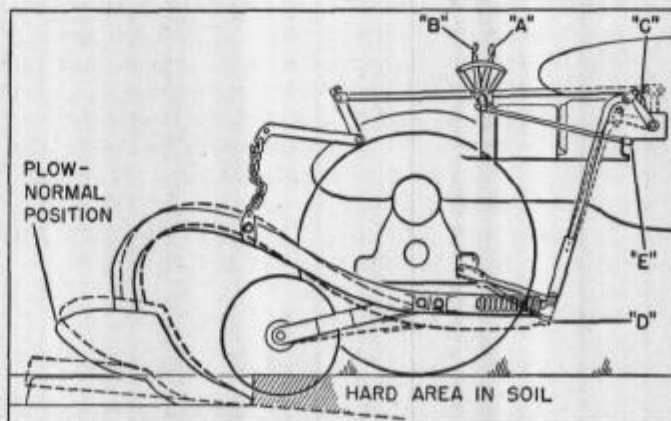
7. Soil conservation made easy — Farmers can divide their land into small fields and diversify their crops for proper land usage — the turns at the ends of the field can be made without stopping or slowing down to raise and lower implements. Grassed waterways can be crossed without ruining the sod.

8. Safer operation — No longer is it necessary to crawl in and out and over levers, their accompanying springs and mechanical linkage. Nor is there danger of becoming unbalanced from heaving or tugging on levers. Practically every member of the family can become a tractor operator.

9. Unobstructed vision — With Farmall Touch-Control the operator has a clear, unobstructed view. He can give the work undivided attention.

10. Minimum overhaul and maintenance — The Farmall Touch-Control system consists essentially of a pump, and a self-contained unit incorporating six valves, and two pistons. No adjustments are necessary. Under ordinary service conditions, little or no maintenance is required.

11. No. 10 engine oil — Special hydraulic oil is not required; nor, is it necessary to change oil with the seasons. Eight and one-fourth pints of No. 10 engine oil is used in the Farmall Touch-Control system the year round. Tested "O" ring packing seals are used to assure that the oil is retained within the system.



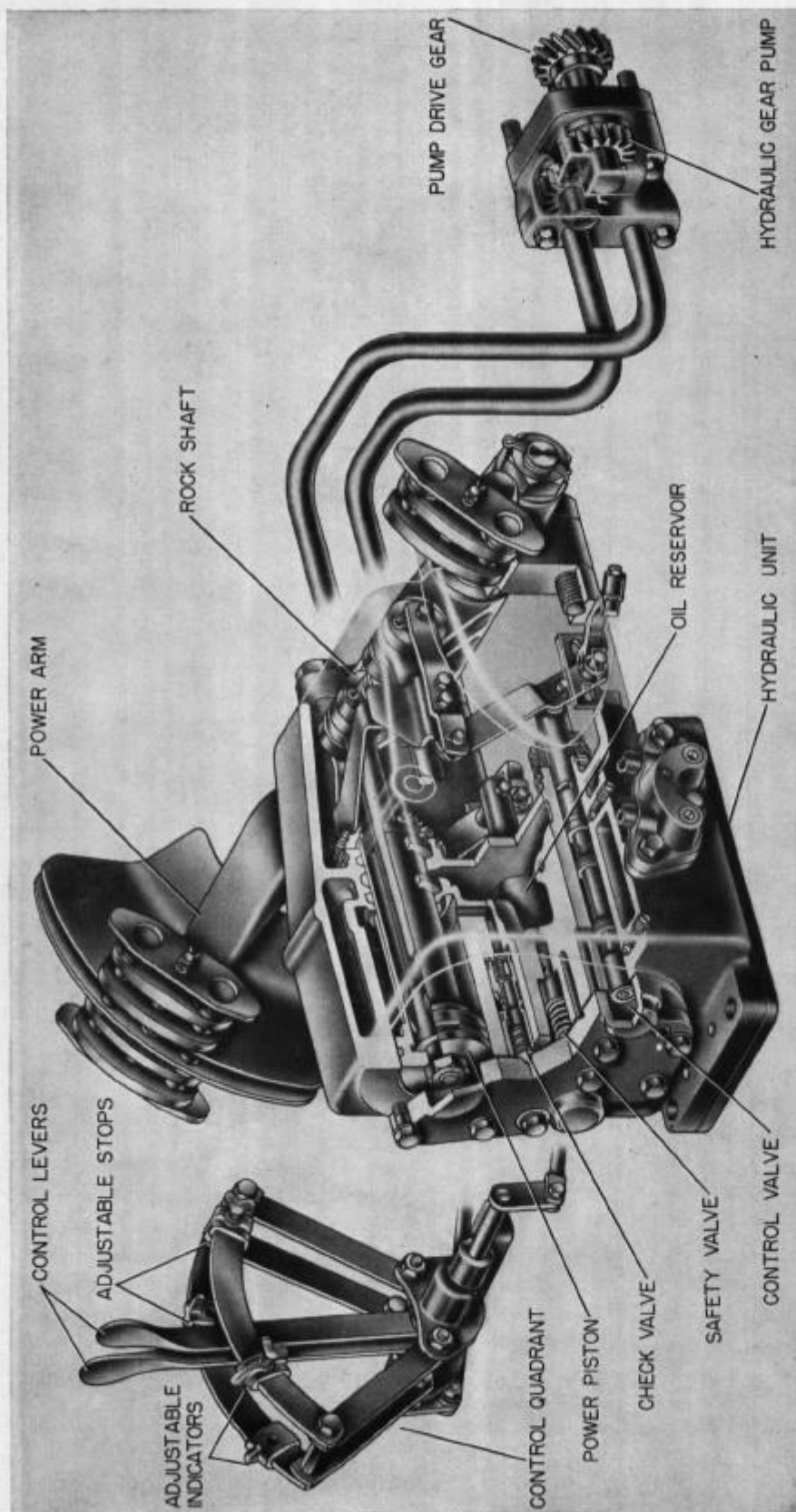
Illust. 3 — When the plow tends to "ride up" upon entering a hard section of soil, it may be returned to normal position by a fingertip touch of lever (A). Lever movement causes the power arm (C) to revolve. The hitch point (D) is lowered and the plow is brought back to its original depth. Lever (B) is used to raise and lower the plow at the ends of the furrow.





Farmall Touch-Control

For Farmall Super-A and C Tractors (Continued)



Illust. 1 — Cut-away view of Touch-Control system of Farmall Super-A. The Touch-Control for Farmall C is the same except that it has two power arms on the right-hand side.

Farmall Touch-Control

What It Comprises

Farmall Touch-Control consists of:

An engine-driven gear-type pump.

A hydraulic unit consisting of two hydraulic systems which comprises: two control valves, four check valves, a regulator valve, a safety valve, two pistons, and an oil reservoir.

A two-lever control quadrant comprises two short levers, two quadrants, two adjustable stops, and two adjustable indicators.

Basic Unit Relationships

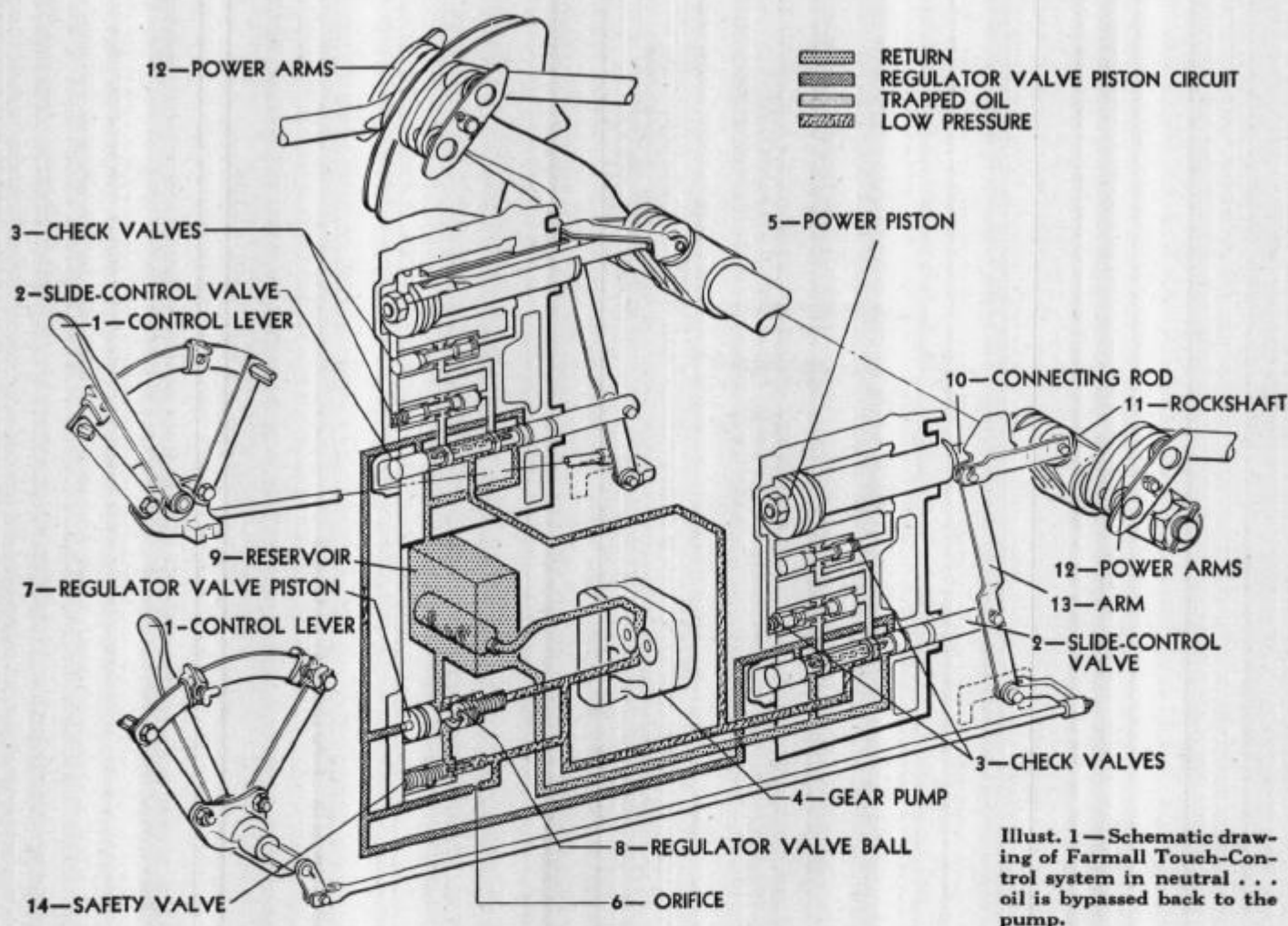
The gear-type pump is connected by two tubes to the hydraulic unit. Attached to the front of the hydraulic unit are two rockshafts at the end of which are three (or four) power arms . . . the number of arms being dependent upon which tractor the unit is installed. Farmall Super-A tractor has two arms on the left side and one on the right side, Farmall-C has two arms on each side. The two-lever Touch-Control quadrant is attached to the tractor steering post.





Farmall Touch-Control

For Farmall Super-A and C Tractors (Continued)



Illust. 1 — Schematic drawing of Farmall Touch-Control system in neutral . . . oil is bypassed back to the pump.

How Touch-Control Works

For Farmall Touch-Control to be operative, the engine must be running so that the pump, which is driven from the engine timing gear train, continuously circulates oil through the hydraulic system. The system is controlled by two Touch-Control levers.

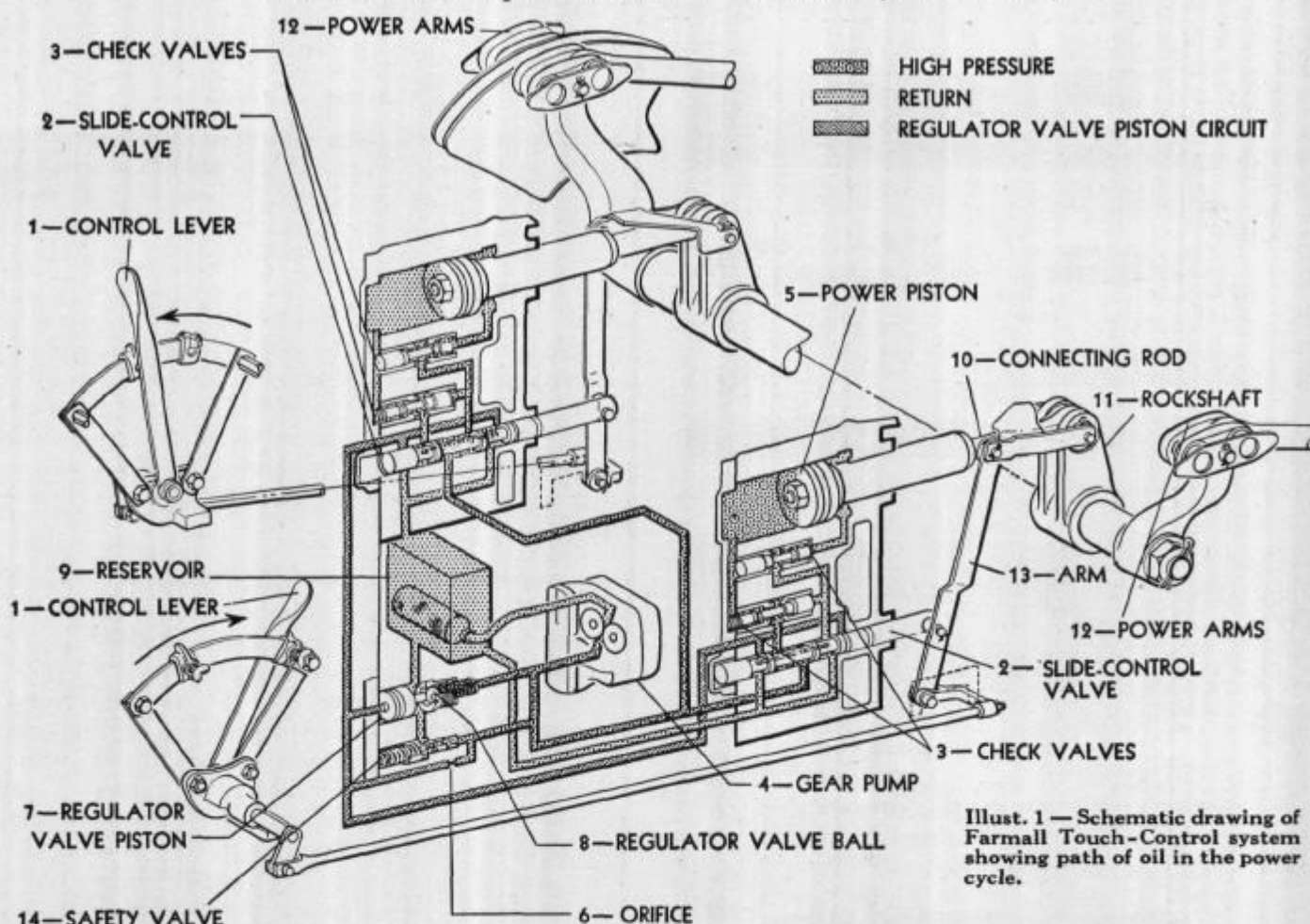
Neutral — Whenever the engine is running and the control levers (1) are stationary, the two slide-control valves (2) block the passages from the pump (4) to the check valves (3) and to both sides of the power pistons (5). As soon as the engine starts, the oil from the pump starts to apply pressure on the system. Since the

passages are closed to the power pistons (5), pressure is applied through the regulator valve orifice (6) on the regulator valve piston (7). This slight pressure (32 pounds per square inch) moves the regulator valve ball (8) off its seat and opens up a free passage for the oil to flow through the valve. The oil is then by-passed directly to the reservoir (9). Since the regulator valve piston (7) has four times the area of the valve ball (8), it easily opens and holds the ball off its seat. The oil circulates in this manner until one or both of the control levers are moved.



Farmall Touch-Control

For Farmall Super-A and C Tractors (Continued)



Illust. 1 — Schematic drawing of Farmall Touch-Control system showing path of oil in the power cycle.

Power Cycle — In the lifting operation the forward movement of the lower control lever (1) moves the slide control valve (2) forward. This opens passages for three circuits of oil. The regulator valve-piston (7) circuit is free to flow into the return oil circuit which instantly relieves the pressure on the regulator valve piston (7) and causes the regulator valve ball (8) to seat. A small quantity of oil continuously passes through the regulating valve orifice (6) and by-passes to the oil reservoir (9). The oil from the pump (4) now pushes the first check valve (3) off its seat and applies the necessary pressure (up to 1200 pounds per square inch) on the head of the power piston (5). The instant the pressure starts to build up to move the power piston (5), this pressure also moves the piston in upper check valve (3) and forces the valve off its seat. As the power piston (5) is moved, the oil, locked on the back side of the piston, flows back to the oil reservoir (9).

As the power piston (5) moves outward, a connecting rod (10) attached to the rockshaft (11) transmits this motion to the power arms (12) at the sides of the tractor to accomplish the lifting operation.

The piston (5) starts to move the instant the control lever is moved. As soon as the control lever is stopped, or reaches a preset position a response mechanism, consisting of a beam-type arm (13) connected to the slide control valve (2) and the rockshaft (11) returns the slide

control valve (2) to the neutral position as soon as the piston (5) has moved the distance corresponding to the movement of the lever (1). The check valves (3) then automatically return to their seats and positively lock the piston (5). Simultaneously, the regulator valve piston (7) opens the regulator valve (8), which, again, permits the oil to bypass to the reservoir.

In the lowering operation, the control lever is moved to the rear. This moves the slide control valve in the opposite direction and reverses the flow of oil to the power piston. Pressure is applied to the opposite side of the piston, which forces it back into the cylinder and permits the oil on the other side to return to the reservoir.

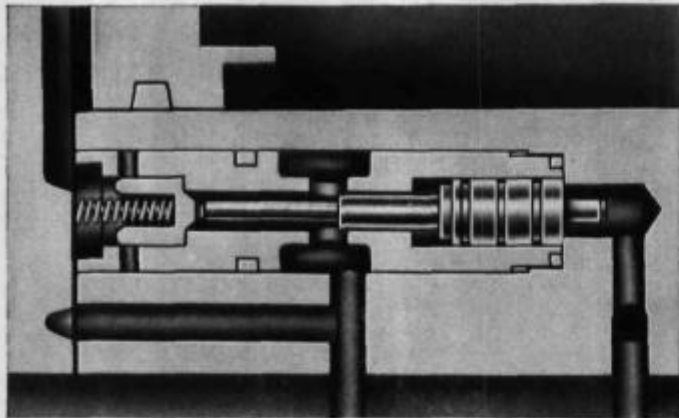
A safety valve (14) is provided in the hydraulic system to protect it against excessively heavy loads. The valve opens at 1200 pounds per square inch pressure and allows the oil to by-pass to the reservoir (9).

The Touch-Control levers can be moved slowly a short distance and stopped anywhere on the quadrant to obtain precision operating adjustments. They also can be moved quickly all the way forward or back to lower or raise implements instantly.

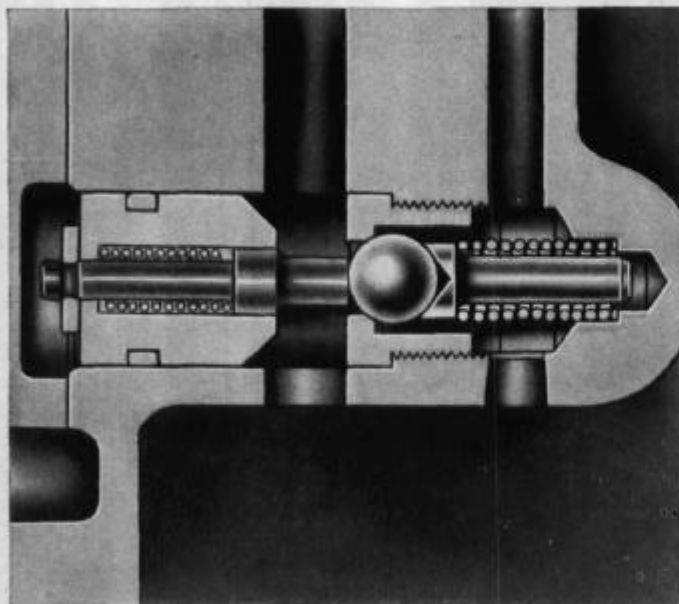
When Touch-Control levers are stationary and the system is in neutral, oil is trapped on both sides of the power piston by the check valves (3), thereby firmly holding the implement in any position.

Farmall Touch-Control

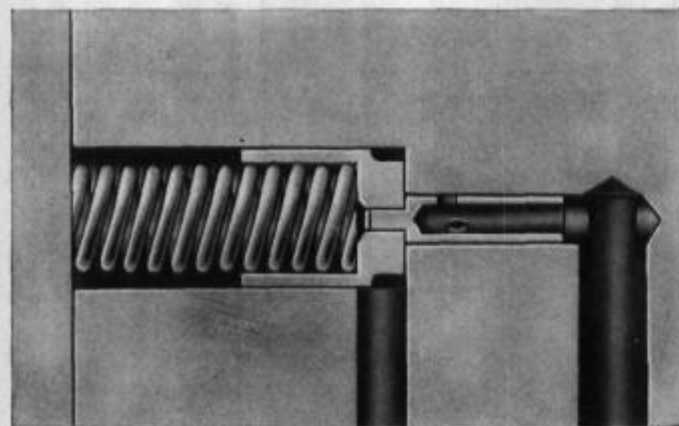
For Farmall Super-A and C Tractors (Continued)



Illust. 1 — Cross-section of one of the four check valves.



Illust. 2 — Cross-section of regulator valve.



Illust. 3 — Cross-section of safety valve.

Details of Valves

Check Valves — The two poppet-type check valves for each power piston are controlled by a spring and actuator piston. The valves positively lock the oil on each side of the power piston when the system is not in operation. In this way, the implements are firmly held in any position desired.

When the slide control valve is moved, it opens the passages to each side of the piston. The incoming oil pressure pushes one of the valves off its seat, moves the piston in the other valve, and also pushes this valve off its seat. The instant the control valve closes off the oil passages leading to the power piston, the check valves return to their seats and positively lock the power piston.

Regulator Valve — This is a ball-type, piston-operated valve which is held on its seat by a spring. This valve converts the hydraulic system from the neutral cycle to the power cycle. When the pump is operating and both control valves are stationary, the oil from the pump has to have an outlet. Since it cannot flow to the power piston, a small quantity passes through the regulator valve orifice and moves the regulator valve piston. The piston has four times the area of the valve ball and easily opens and holds the ball off its seat at a low pressure (32 pounds per square inch). The instant the regulator valve is opened, the oil passes through the valve and back to the reservoir.

When either or both of the control valves are moved by the levers, passages are opened which allow a quantity of oil from the regulator valve piston chamber to flow to the reservoir. This relieves pressure on the piston and permits the ball valve to seat. Since the pumped oil can no longer bypass to the reservoir, it goes to the power piston through the passages opened by the control valve. The instant the power piston reaches its predetermined position, the control valve closes the passages and the regulator piston reopens the regulator valve.

Safety Valve — This is a relief valve consisting of a piston held in a closed position. If the implement load should build up the system pressure to a point over 1200 pounds per square inch, the piston will move to uncover one of three small holes through which the oil passes into the reservoir until the pressure is relieved. Greater pressure will cause the piston to move farther, the objective being in all cases to maintain an operating pressure in the system of not more than 1200 pounds per square inch.



Farmall-H Tractor



Illust. 1 — Farmall-H equipped with belt pulley and Lift-All pump.

- Choice of gasoline or distillate engine.
- Outstanding fuel economy.
- Valve-in-head design.
- Replaceable cylinder sleeves.
- Pressure lubrication.
- Efficient cooling system.
- Heavy-duty and long-life crankshaft.
- Replaceable precision-type bearings.
- Variable-speed governor.
- Dependable ignition—magneto.
- Protected against dust, dirt and water:
 - Oil-bath air cleaner.
 - Fuel strainers.
 - Rawhide seals.
 - Replaceable element oil filter.
- Ball and roller bearings.

For full explanation see General Tractor Features section.

Medium-Size All-Purpose Tractor

The Farmall-H is the medium size all-purpose tractor for diversified 120 to 160 acre farms. It does the work of 4 to 8 horses or mules. This tractor, together with a wide variety of direct-connected and pull-behind equipment available for use with it, will do all the work from preparing the seedbed to cultivating and harvesting the crops.

Capacity

The approximate amount of work the Farmall-H will do in a 10-hour day is as follows:

Moldboard plow. Two 14 or 16-in. bottoms (size depends upon soil type and plowing depth)—9 to 11 acres.

Disk plow. Two-furrow 8, 9, 10 or 11-in. cut (width of cut varies with soil type and plowing depth)—5 to 8 acres.

Middlebuster. Two bottom, 38-in. rows—26 acres.

Disk harrow. 7-ft. tandem—28 acres; 15 ft. single cut—60 acres.

Peg-tooth harrow. 5 sections—100 acres.

Planter. Two, 40-in. rows—25 acres; four, 40-in. rows—45 acres.

Drill. 28-6 tractor drill—45 acres.

Cultivate. Two, 40-in. rows—28 acres.

Mower. 7-ft. cutter bar—36 acres.

Combine. 6-ft.—20 acres.

Corn pickers. 1-row—8 to 12 acres.

Belt power. 22 x 38 thresher; No. 4A husker and shredder; No. 6 or No. 10 and 10C hammer mills; No. 30 corn sheller; type B or D 10-in. feed grinders.

Balanced Power

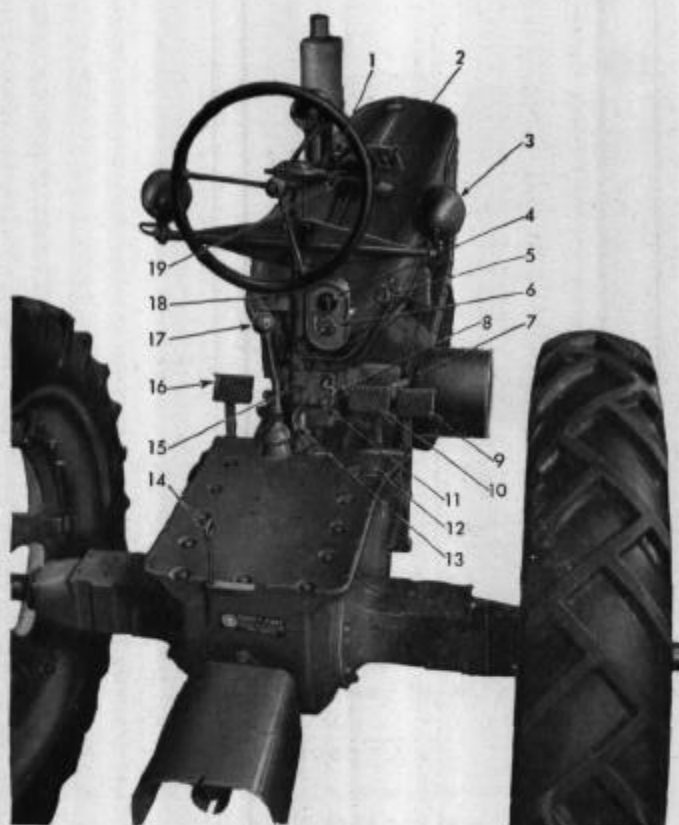
In this tractor, as in the other Farmalls, power and weight are balanced to give maximum pulling ability. In addition, utility, operating economy, riding comfort, ability to stand up to hard work, and ease of operation have been achieved in a tractor that is good to look at.



INTERNATIONAL HARVESTER



Farmall-H Tractor



Illust. 1—Farmall-H with seat removed to show controls. All controls and instruments are within easy reach and view of the operator. (1) Oil pressure indicator. (2) Heat indicator. (3) Lights. (4) Ammeter. (5) Lift-All control. (6) Light switch. (7) Brake pedal latch. (8) Radiator shutter control. (9) and (10) Brake pedals. (11) Magneto grounding switch. (12) Brake pedal lock. (13) Belt pulley control. (14) Power take-off control. (15) Choke. (16) Clutch pedal. (17) Gearshift lever. (18) Starter button. (19) Governor control lever.

A Speed for Every Job

Four field speeds together with a manually controlled variable-speed governor provide perfect adjustment of speed—a perfect speed for every job. Then there is a high speed for hauling and traveling to and from the field. This wide choice of working speeds gives great flexibility of power and adapts the tractor exactly to the job that is being done. The operator can slow up the tractor when necessary by reducing the speed of the engine—for example, when turning at the ends of the field—without a loss in drawbar pull.

Other Outstanding Features

The Farmall-H has straight rear axles which give wheel treads of 44 to 80 inches by sliding the wheels in and out on the axles and by reversing the wheels on the axles. The drawbar is quickly and easily attached and detached making it easy to change from one field operation to another, whether it requires a direct-connected implement or pull-behind type.

The tractor seat is located high so as to place the operator out of the dust zone and to give him a clear vision of his work. If the operator gets tired of sitting he can tilt the seat back which gives him comfortable standing room. The hydraulic power lift, available as special equipment, speeds up tractor and implement operation and reduces to a minimum the effort required to control implements.

Regular Equipment

Engine: Distillate or high-compression gasoline engines are optional; distillate engine-equipped tractor includes radiator shutter. Heat indicator. IH magneto. Variable speed governor. Oil bath-type air cleaner. Oil filter with replaceable paper element.

Chassis: 5-speed transmission. Large upholstered seat. Foot-operated differential brakes. Quick-attachable drawbar.

Tires (as ordered):

Front	Rear
5.50 x 16-in., 4-ply double tires	10-38-in., 4-ply tires 11-38-in., 4-ply tires 10-38-in., 6-ply tires 11-38-in., 6-ply tires
6.00 x 16-in., 4-ply double tires	
6.50 x 16-in., 4-ply single tire	
7.50 x 10-in., 4-ply or 6-ply single tire	

Special Equipment

Radiator shutter. Heat indicator. High-altitude pistons—5000 and 8000-ft. Exhaust muffler. Exhaust pipe extension. Spark arrester. Air pipe extension. Collector pre-cleaner for air cleaner. Swinging drawbar. Adjustable drawbar. Power take-off. Belt pulley. Tire pump. Electric starting and lighting. Wheel weights—front and rear. Adjustable-tread wide front axle with adjustable wheelbase. Variable-tread pneumatic front wheels. 100-in. tread rear axles. Rear wheel fenders. Overtires for steel wheels. Rear wheel extension rims. Spade lugs. High skid rings, 2½-in. Single front wheel. Reverse-flow fan. High 4th speed, 7 m.p.h. Low, low speed, 1½ m.p.h. Cultivator shifting lever.

Steel Wheels:

Front	Rear
22½-in. x 3½-in. double wheels with skid rings, 2-in. high	51 x 6-in. steel, with spade lugs, 4-in. high and 2¼-in. wide. 51 x 8-in. steel, with spade lugs, 4-in. high and 3-in. wide. 51 x 2-in. channel rim with 32 double spade lugs.



Farmall-M Tractor

Illust. 1 — Farmall-M with belt pulley.



- Choice of gasoline or distillate engine.
- Outstanding fuel economy.
- Valve-in-head design.
- Replaceable cylinder sleeves.
- Pressure lubrication.
- Efficient cooling system.
- Heavy-duty and long-life crankshaft.
- Replaceable precision-type bearings.
- Variable-speed governor.
- Dependable ignition—magneto.
- Protected against dust, dirt, and water:
 - Oil-bath air cleaner.
 - Fuel strainers.
 - Rawhide seals.
 - Replaceable element oil filter.
- Ball and roller bearings.

For full explanation see General Tractor Features section.

The Farmall-M is the largest all-purpose tractor available. The size and power of this tractor fits it for the large diversified 160 to 240 acre farm or for farms having difficult soil conditions. It will do all the work on farms that in the days of horse farming required up to 12 horses. This is a good tractor for those operators who plan to do custom work because it will easily handle a two-row corn picker, a four-row cultivator, a four-row middleduster, a four-row cotton planter, a two-row potato digger and the larger-size belt-driven machines. This tractor, like all the other Farmalls, has avail-

able for it direct-connected and pull-behind implements scaled in size and capacity to utilize its sturdy power to maximum efficiency.

Capacity

The approximate amount of work the Farmall-M will do in a 10-hour day is as follows:

Moldboard plow. Three 14 or 16-in. bottoms, (size depends upon soil type and plowing depth)—15 to 17 acres.

Disk plow. Three-furrow 8, 9, 10 or 11-in. cut (cut varies with soil type and plowing depth)—8 to 12 acres.

Middlebuster. 2, 3, or 4 bottoms—38-in. rows—26, 40 and 53 acres respectively.

Disk harrow. 10-ft. tandem—42 acres; 18 ft. single cut—75 acres.

Peg-tooth harrow—6-section—120 acres.

Planters. Two (40-in.) rows—25 acres; four (40-in.) rows—50 acres.

Drills. 28-6 tractor drill—45 acres.

Cultivate. Two (40-in.) rows—28 acres; four (40-in.) rows—60 acres.

Mower. 7-ft. cutter bar—36 acres.

Combine. 6-ft., 20 acres.

Corn pickers. 1-row—8 to 12 acres; 2-row—16 to 24 acres.

Belt power—28 x 46 thresher; No. 4A husker and shredder; No. 6 or No. 10 and 10C hammer mills; No. 30 corn sheller; Type B or D 10-inch feed grinders.



INTERNATIONAL HARVESTER



Farmall-M Tractor

Balanced Power

In this tractor, as in the other Farmalls, power and weight are balanced to give maximum pulling ability. In addition, utility, operating economy, riding comfort, ability to stand up to hard work, and ease of operation have been achieved in a tractor that is pleasing in appearance.

A Speed for Every Job

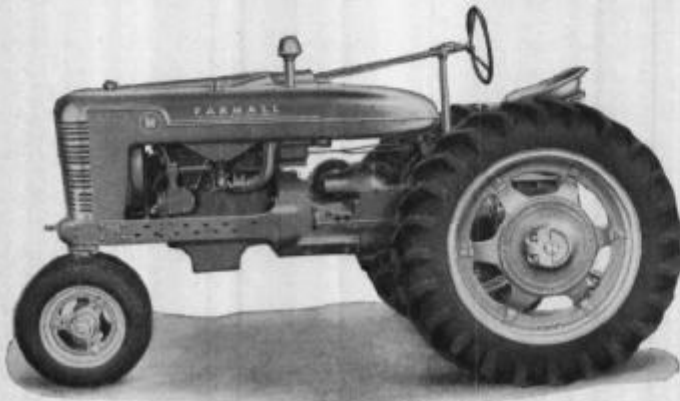
Four field speeds, together with a manually controlled variable-speed governor, provide perfect adjustment of speed—a perfect speed for every job. Then there is a high speed for hauling and traveling to and from the field. This wide choice of working speeds gives great flexibility of power and adapts the tractor exactly to the job that is being done. The operator can slow up the tractor when necessary by reducing the speed of the engine—for example, when turning at the ends of the field—without a loss in drawbar pull.

Other Outstanding Features

The Farmall-M has straight rear axles which give wheel treads of 52 to 88 inches by sliding the wheels in and out on the axles and by reversing the wheels on the axles.

The drawbar is quickly and easily attached and detached making it easy to change from one field operation to another whether it requires a direct-connected implement or pull-behind type.

The tractor seat is located high so as to place the operator out of the dust zone and to give him a clear vision of his work. If the operator gets tired of sitting he can tilt the seat back which gives him comfortable



Illust. 1 — Rugged power and modern styling are reflected in the sleek lines of the Farmall-M tractor on pneumatic tires. Like all Farmalls it combines both utility and pleasing appearance.

standing room. The differential brake pedals, convenient to the right foot, can be operated together as one brake, or separately for making short turns. The hydraulic power lift, available as special equipment, speeds up tractor and implement operation and reduces to a minimum the effort required to control implements.

Regular Equipment

Engine: Choice of either a distillate engine including radiator shutter or a high-compression gasoline engine. IH magneto. Variable speed governor. Oil filter with replaceable element. Water pump. Oil-type air cleaner. Heat indicator.

Chassis: 5-speed transmission. Large upholstered seat. Foot-operated differential brakes. Quick-attachable drawbar.

Tires (as ordered):

Front	Rear
6.00 x 16-in., 4-ply double front tires	11-38-in., 4-ply tires 11-38-in., 6-ply tires 12-38-in., 6-ply tires 11-38-in., 4-ply tires
6.50 x 16-in., 6-ply double front tires	
7.50 x 16-in., 6-ply single tire	
9.00 x 10-in., 8-ply single tire	

Special Equipment

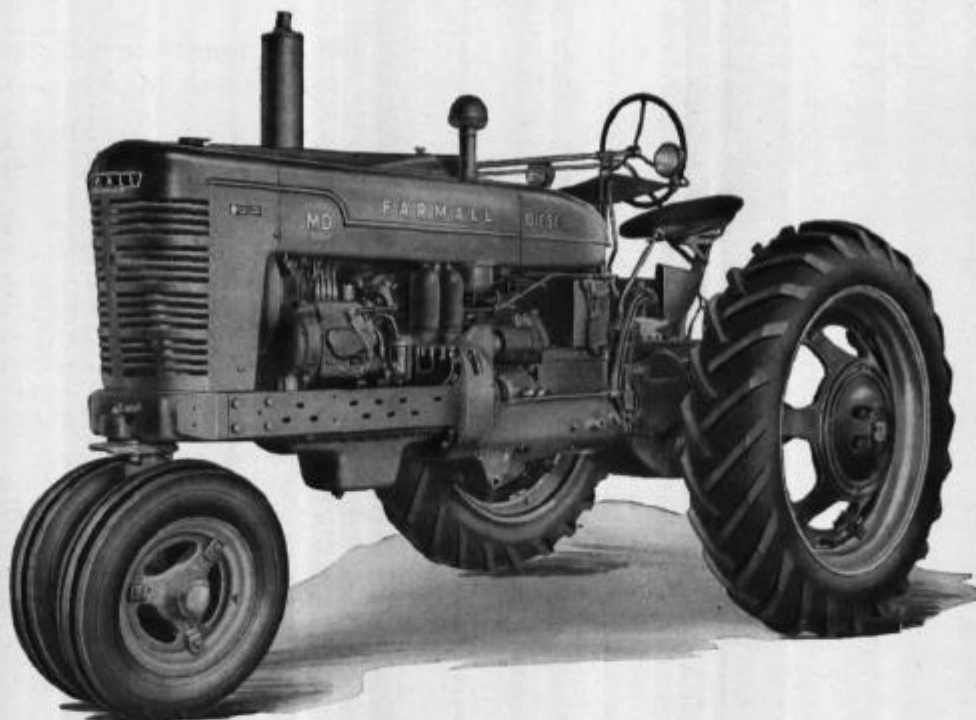
Radiator shutter. Heat indicator. High-altitude pistons—5000 and 8000-ft. Exhaust muffler. Exhaust pipe extension. Spark arrester. Air pipe extension. Collector pre-cleaner for air cleaner. Swinging drawbar. Adjustable drawbar. Power take-off. Belt pulley. Tire pump. Electric starting and lighting. Wheel weights—front and rear. Adjustable-tread wide front axle with adjustable wheelbase. Variable-tread pneumatic front wheels. 100-in. tread rear axles. Rear wheel fenders. Overtires for steel wheels. Rear wheel extension rims. Spade lugs. High skid rings, 2½-in. Single front wheel. Reverse-flow fan. High 4th-speed, 7 m.p.h. Low, low-speed, 1½ m.p.h. Cultivator shifting lever.

Steel Wheels:

Front	Rear
22½ x 4-in. double wheels with skid rings, 3-in. high	51 x 8-in. steel, with spade lugs, 4-in. high and 2½-in. wide.
	51 x 10-in. steel, with spade lugs, 5-in. high and 3-in. wide.
	51 x 2-in. channel rim with 32 double spade lugs.



Farmall-MD Diesel Tractor



Illust. 1 — Farmall-MD equipped with electric lights, starter, and muffler.

The Farmall-MD is essentially the same tractor as the Farmall-M except that it is equipped with International Harvester's 4-cylinder, $3\frac{7}{8} \times 5\frac{1}{4}$ -in. full-Diesel engine.

Low-Cost Operation. This tractor is provided for row-crop farmers who use a tractor a sufficient number of hours each year so that fuel cost is a sizable item. The Farmall-MD provides the lowest possible cost of tractor operation—The Diesel engine not only uses cheaper fuel but less of it. The point that should be kept in mind is that the farmer must operate his tractor a sufficient number of hours each year so that the saving in fuel cost readily offsets the higher first cost of a Farmall-MD over a Farmall-M.

A Full-Diesel Engine. The Farmall-MD engine has all the outstanding features of design and quality, common to all International Harvester engines. In addition it has International designed precombustion chamber type of cylinder head, injection nozzles, injection pump and quick all-weather starting system. This enables the engine to perform smoothly and economically under various load and operating conditions demanded of tractors in heavy-duty service.

The Farmall-MD full-Diesel engine, with its many outstanding features, is carefully manufactured by skilled craftsmen and is economical in operation, dependable in performance, yet simple to operate and maintain.

The power of the Farmall-MD is the same as the Farmall-M so the work it will do is the same as that listed for the Farmall-M.

Regular Equipment

The Farmall-MD is regularly equipped with a 4-cylinder Diesel engine and otherwise it is the same as the Farmall-M.

Special Equipment

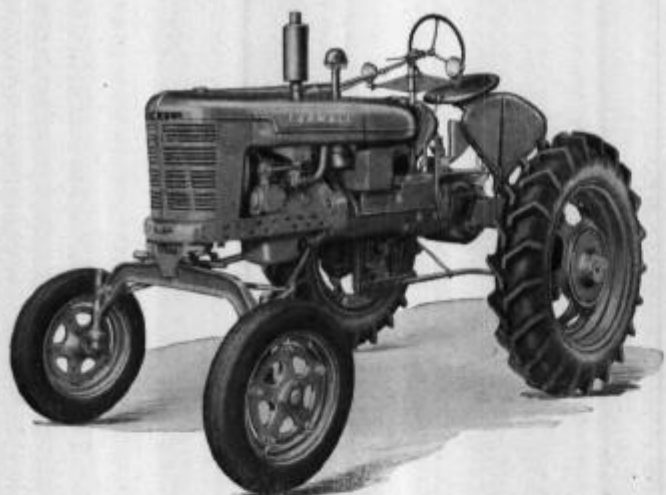
The special equipment available is the same as listed for the Farmall-M.

- Outstanding fuel economy.
- Dependable, all-weather Diesel starting system.
- IH fuel injection pump.
- Valve-in-head engine.
- Replaceable cylinder sleeves.
- Pressure lubrication.
- Efficient cooling system.
- Heavy-duty and long-life crankshaft.
- Replaceable precision-type bearings.
- Variable-speed governor.
- Protected against dust, dirt and water:
 - Oil-bath air cleaner.
 - Fuel strainers.
 - Rawhide seals.
 - Replaceable element oil filter.
- Ball and roller bearings.

For full explanation see General Tractor Features section.



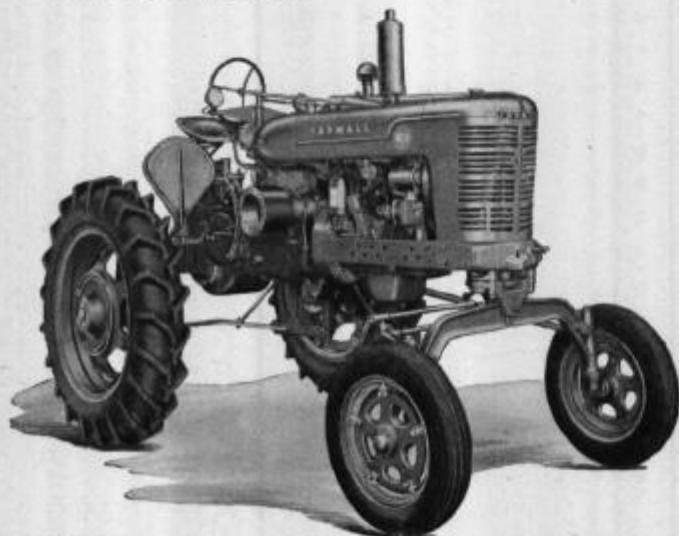
Farmall HV, MV and MDV Tractors



Illust. 1 — Farmall HV equipped with electric lights, muffler, and fenders.



Illust. 2 — Farmall MV equipped with electric lights, muffler, and power lift.



Illust. 3 — Farmall MDV equipped with electric lights, muffler, belt pulley, fenders, and power lift.

High-Clearance Tractors for Cane-Growing Operations

The Farmall HV, MV and MDV cane tractors are modified Farmall H, M and MD tractors designed for high-clearance operation. This feature specifically adapts these tractors to every cane-growing operation and to speedy hauling during planting and harvesting of this crop.

The tractors have high-arched wide-tread front axles, giving 30 $\frac{1}{4}$ inches of clearance. The axle is equipped with pneumatic-tired variable-tread type front wheels, adjustable to give 60, 63 and 66-in. treads. These different treads are obtained by changing the position of the rim on the wheel.

The high-clearance at the rear of the tractors is obtained by using a roller chain-driven countershaft and axle assembly. The rear wheels have a fixed tread of 69 inches, but available is a variable tread rear wheel rim attachment which provides 60, 65 $\frac{3}{4}$, and 72-inch treads.

Other than the front and rear axle arrangement the Farmall cane tractors are the same as the Farmalls H, M and MD, so the same features apply.

These tractors together with the special cane implements designed for them provide machine combinations for every cane-grower's operations.

Regular Equipment

Engine. Choice of either a distillate engine, including radiator shutter, or a high-compression gasoline engine for Farmalls HV and MV, and Diesel engine for Farmall MDV. IH magneto. Variable-speed governor. Oil filter with replaceable paper element. Water pump. Oil-type air cleaner.

Chassis. 5-speed transmission. Large upholstered seat. Foot-operated differential brakes. Flat-bar type drawbar.

Wheels (Farmall HV): 6.00—20-in., 6-ply front tires and 10.00—36-in. 6-ply cane field type (high cleats) rear tires.

Wheels (Farmall MV and MDV): 6.00—20-in., 6-ply front tires and 11.25—36-in. 6-ply cane field type (high cleats) rear tires.

Special Equipment

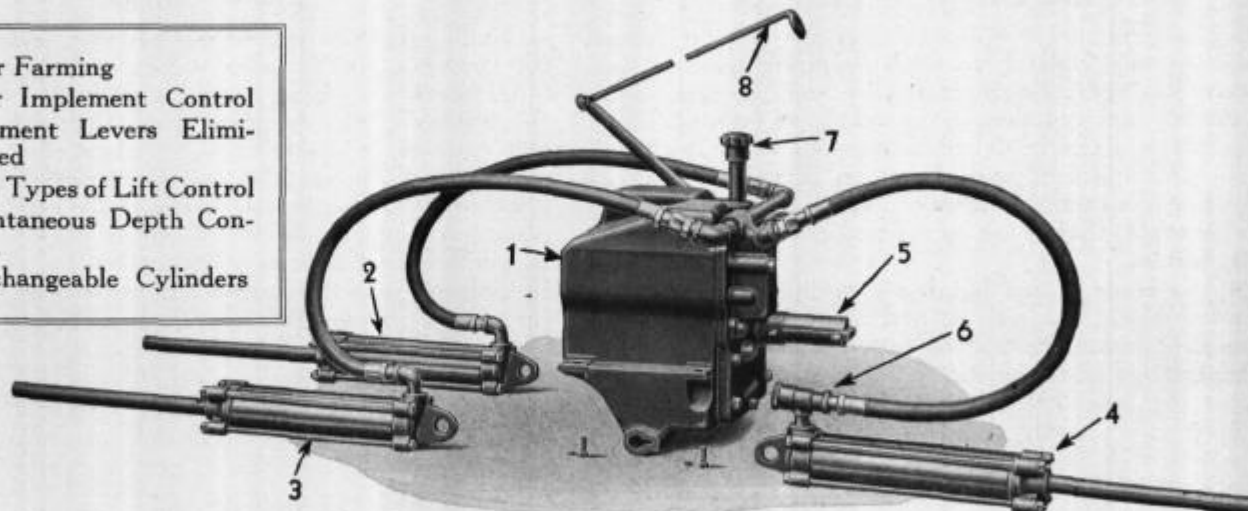
Air pipe extensions. Belt pulley. Cultivator shifter lever. Electric starting and lighting. Exhaust muffler. Exhaust pipe extension. Heat indicator for gasoline or Diesel engine-equipped tractors. High-altitude pistons—5000 and 8000 ft. (not for Farmall MDV). Power take-off. Collector type precleaner. Radiator shutter for gasoline or Diesel engine-equipped tractors. Rear wheel fenders. Rear wheel weights. Front wheel weights. Spark arrester. Tire pump. Hydraulic Lift-All. Variable tread rear wheel rims (provide 60, 65 $\frac{3}{4}$, and 72-inch treads).



Hydraulic LIFT-ALL

(For Farmall H and M Series Tractors and Older Model Farmalls)

- Faster Farming
- Easier Implement Control
- Implement Levers Eliminated
- Three Types of Lift Control
- Instantaneous Depth Control
- Interchangeable Cylinders



Illust. 1 — Farmall hydraulic Lift-All pump and cylinders. The pump unit fits into the tractor clutch housing. Cylinders are attached to the implements. (1) Pump, valves and oil reservoir. (2), (3) and (4) Cylinders. (5) Pump drive. (6) Delayed-lift valve. (7) Oil Filler. (8) Control rod.

The Farmall Lift-All is a hydraulic unit which makes the operation of implements easier, faster and more convenient. Tractor engine power converted into hydraulic power replaces the physical effort required to raise, lower and adjust the working units of direct-connected implements, mounted machines and some pull-type machines.

Implement Operation Easier and Faster

One control rod at the operator's fingertips regulates the lowering, raising or depth of the implement. To raise an implement, the control rod is pulled back, held for an instant and then let go. The instant the implement is completely raised, the control rod snaps back into neutral position. Implements are lowered by pushing the rod forward. To partially raise an implement, the control rod is pulled out slowly and then

returned to the neutral position as soon as the desired operating depth is obtained.

No Tired Muscles. The only implement levers necessary are those required to adjust the depth of the ground-working tools or the position of the working units of such machines as corn pickers, harvester-threshers and cotton pickers. Whether the operator wants to bring the working units all the way up or just "ease them up" when the going gets tough, Lift-All will raise them quickly and hold them firmly at any desired position until released.

Saves Time. With Lift-All, implements can be quickly lowered or raised without stopping when turning at the ends of the field, when crossing grassed water runways, or passing over obstructions.

Specifications

Number	Hydraulic Lift-All (Less Cylinder and Hose)	Net Weight (Approx.)
15 050 ECX	Lift-All for Farmalls H or HV	110 lb.
15 075 ECX	Lift-All for Farmalls M, MV or MD	110 lb.
350 420 R91	Lift-All for Regular Farmall	56 lb.
350 421 R91	Lift-All for F-20 Farmall	56 lb.
350 422 R91	Lift-All for F-30 Farmall	56 lb.

Number	Special Controls	Net Weight (Approx.)
2 100 091 R91	Delayed lift valve	2 lb.
POSP 7269 and POSP 7116	Selective lift valve and control parts	27 lb.
J 13 514 B	Parts required to adapt selective lift control to cultivators	2 lb.

Number	Hydraulic Power Cylinders	Net Weight (Approx.)
POSP 6760	One 1 1/4-in. diameter x 8-in. stroke cylinder with hose and union	18 lb.
POSP 6759	Two 1 3/4-in. diameter x 8-in. stroke cylinders with hoses and unions	30 lb.
POSP 5997	One 2 1/4-in. diameter x 8-in. stroke cylinder with hose and union	19 lb.
POSP 5999	Two 2 1/4-in. diameter x 8-in. stroke cylinders with hoses and unions	34 lb.
POSP 5994	One 3-in. diameter x 8-in. stroke cylinder with hose and union	21 lb.
POSP 5998	Two 3-in. diameter x 8-in. stroke cylinders with hoses and unions	42 lb.



Hydraulic LIFT-ALL

(Continued)

What Lift-All Consists Of

The Farmall Lift-All consists of a hydraulic control unit housing, control rod with mounting bracket, and individual hydraulic cylinders with high-pressure hoses. Different size cylinders are available as ordered. The number and size of cylinders required depends on the type of implement and the scope of control desired. Because the same cylinders can be used on many of the implements, they must be ordered separately to avoid duplication.

The control unit housing contains a gear pump, control and check valves, and an oil reservoir. It is mounted inside the tractor clutch housing in front of the tractor transmission. The gear pump is driven from the front end of the transmission countershaft. The pump is ready to deliver up to 800 pounds per square inch pressure whenever the engine is running and the clutch is engaged. At 800 pounds, it will lift from 1,920 to 15,700 pounds, depending on the diameter of cylinder used.

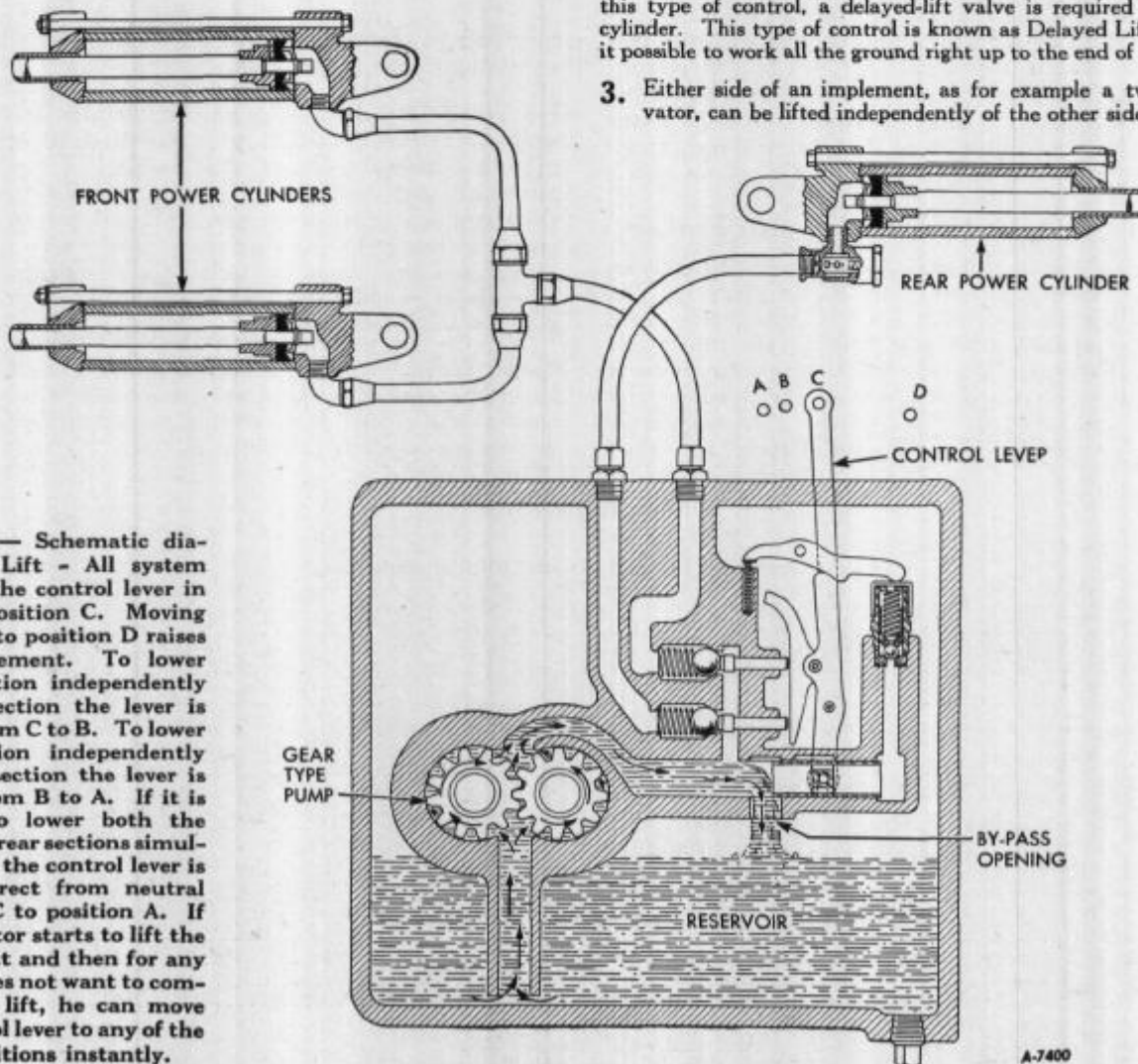
How It Works

Pulling out the control rod moves a lever which in turn moves a control piston which allows the pump to force oil through hoses into the cylinder. As soon as the pistons in the cylinders reach their full stroke, a ball relief valve unlatches a lever and spring pressure returns it to neutral. Pushing the control rod in moves a lever which in turn pushes the check valves off their seats. As long as the check valves are open, the oil in the cylinders is free to return to the oil reservoir. By only pushing the control rod part of the way back, the front cylinder can be emptied before the rear cylinder.

Three Types of Implement Control

The following types of implement control can be obtained with the Lift-All:

1. All the units of the implement can be raised or lowered at one time.
2. The front section of an implement can be lifted before the rear section and the rear section will automatically raise at the point where the ground tools have left the ground or vice versa. To obtain this type of control, a delayed-lift valve is required for the rear cylinder. This type of control is known as Delayed Lift and makes it possible to work all the ground right up to the end of the row.
3. Either side of an implement, as for example a two-row cultivator, can be lifted independently of the other side. This type



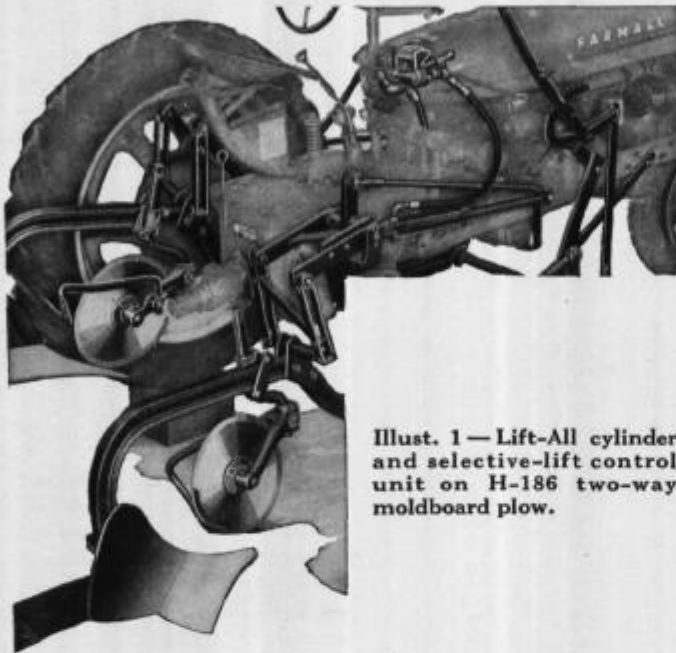
Illust. 1 — Schematic diagram of Lift - All system showing the control lever in neutral position C. Moving the lever to position D raises the implement. To lower front section independently of rear section the lever is moved from C to B. To lower rear section independently of front section the lever is moved from B to A. If it is desired to lower both the front and rear sections simultaneously the control lever is moved direct from neutral position C to position A. If the operator starts to lift the implement and then for any reason does not want to complete the lift, he can move the control lever to any of the other positions instantly.



Hydraulic LIFT-ALL

(Continued)

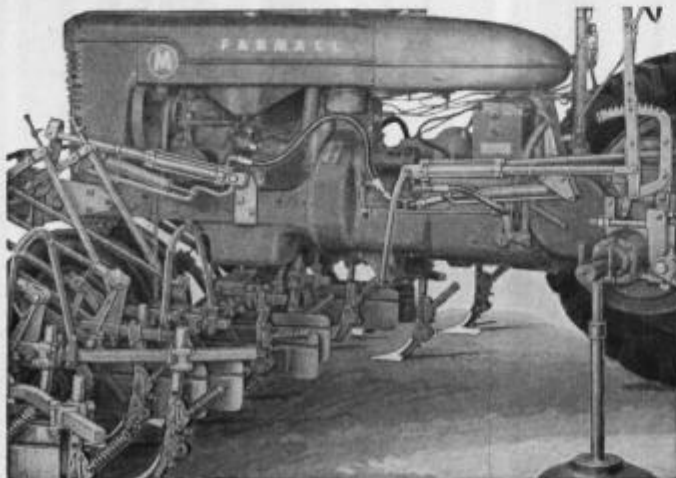
of control requires a control lever, selective valve and parts for attaching the unit to the tractor steering post in place of the regular control rod. This method of control is known as Selective Lift and adapts row-crop machines for working "point rows." The selective lift control is also required to operate the H-186 two-way moldboard plow so that one bottom can be controlled independently of the other bottom.



Illust. 1 — Lift-All cylinder and selective-lift control unit on H-186 two-way moldboard plow.

Depth Control

Farmall Lift-All also provides instantaneous depth control. For example, if the soil is wet and the tractor wheels start slipping or the load is greater than the tractor can pull, Lift-All can be used to quickly change the implement's working depth. Just a pull on the rod starts raising the implement. Returning the rod to its neutral position stops the implement's rise and locks it in position until the control rod is moved again.



Illust. 2 — Lift-All cylinders control the M-448 four-row cultivator.

Precision-Built for Trouble-Free Service

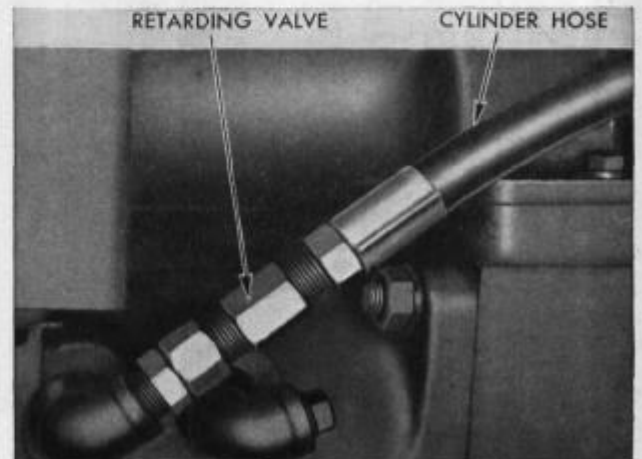
The Lift-All pump is precision-built to give many years of trouble-free service if ordinary precautions are taken to keep dirt out of the oil. The two pump gears rotate on four precision needle bearings which assure perfect contact of the gear teeth so that they will build up the correct pressure (up to 800 pounds per square inch). Shims are provided between the pump body and the side plate permitting adjustment of end clearance of the gears after wear occurs. Removal of shims restores the pump to full operating efficiency, easily and economically.



Illust. 3 — Cylinder attached to disk harrow. It de-angles the harrow sections.

Cylinders Interchangeable

Most of the Farmall H and M series tractor implements require a 1 $\frac{3}{4}$ -inch diameter and 8-inch stroke cylinder. A few heavier implements, such as M-448 cultivator and the M-10 and M-11 middlebusters, require 2 $\frac{1}{4}$ -inch diameter cylinders. The fact that most of the implements use the same size cylinder eliminates the necessity of a purchaser buying cylinders for each implement.



Illust. 4 — A drop-retarding valve should be used with heavy implements to retard their fall when lowering them.



INTERNATIONAL HARVESTER



Hydraulic LIFT-ALL

(Continued)

The chart below lists all the implements designed for operation with Lift-All, the package number of the cylinders, the size of the cylinders, and whether selective-lift control, delayed-lift valve, or drop-retarding valve are required.

Lift-All Power Applications

Cylinder Size, Inches Part No. (Complete with Hose)	1 3/4 x 8		2 1/4 x 8		3 x 8		Selective Lift	Drop Retarding Valve (23826-A)	Delayed Lift Valve (POSP-5996)
	POSP-6760	POSP-6759	POSP-5957	POSP-5999	POSP-5994	POSP-5998			
Number of Cylinders	1	2	1	2	1	2			
H-186 Two-Way Plow.....		X					Regular		
H-190 One-Furrow Plow.....	X								
HM-150 Disk Plow.....		X							
HV-1 Cane Tools.....						X	Regular		
MV-1 Cane Tools.....						X	Regular		
M-3 Bedder.....		X							
HM-4 Bedder.....				X					
Disk Harrow (De-angling).....	X								
HM-221 Cultivator.....		X					Special†		Special*
HM-228 Cultivator.....		X					Special		Special*
HM-236 and 236-S Cultivators.....		X					Special		Special*
HM-238 and 238-G Cultivators.....		X					Special†*		Special*
HM-240 Cultivator.....		X					Special†**		Special*
HM-242 and 242-A Cultivators.....		X					Special		Special*
HM-243 Cultivator (Front).....		X					Special		
HM-243 Cultivator (Rear).....				X					
HM-448 and 448-G Cultivators.....				X					Special*
HM-639 Cultivators.....		X							Special*
FA-40 Lister-Cultivator.....			X						
HM-17 Sub-Surface Cultivator.....				X					
HM-19 Middlebuster.....		X							
M-19 Middlebuster.....	X	X							Regular
H-10 and HM-10 Middlebusters.....				X			Special		
M-11 Middlebuster.....				X			Special		
HM-71 Middlebuster, Lister and Planter.....	X								
HM-96 Cotton and Corn Planter.....	X								
M-57 Cotton and Corn Planter.....		X							
HM-46 and 47 Listers.....		X							
HM-210, 211 and 212 Planters.....				X			(2)Regular		
HM-6 Beet Puller.....		X							
HM-1 Beet Harvester.....			X						
Nos. 42, 52R, 62 Combines.....	X								
No. 24 Corn Picker.....	X (or any size single cylinder)								

† May be used on all except No. 7 Tool Bar Attachment.

†* May be used on all except No. 15 Tool Equipment.

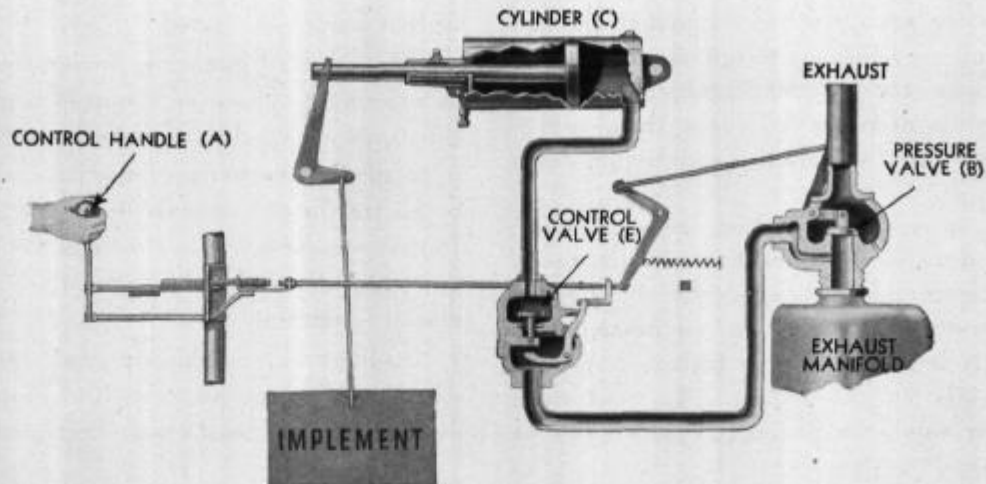
†** May be used on all except Nos. 13, 15 and 26 Tool Equipment.

* Two-row cultivators with delayed lift require one additional power cylinder, POSP-6760; four-row cultivators with delayed lift require one additional power cylinder, POSP-5999.

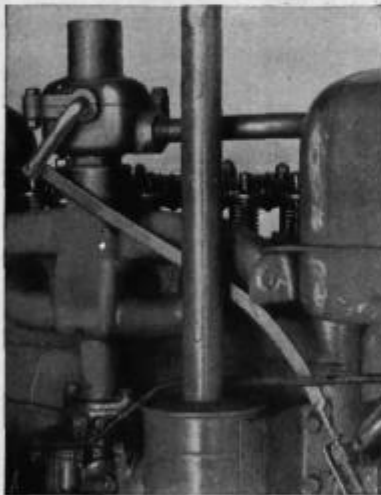


Pneumatic LIFT-ALL

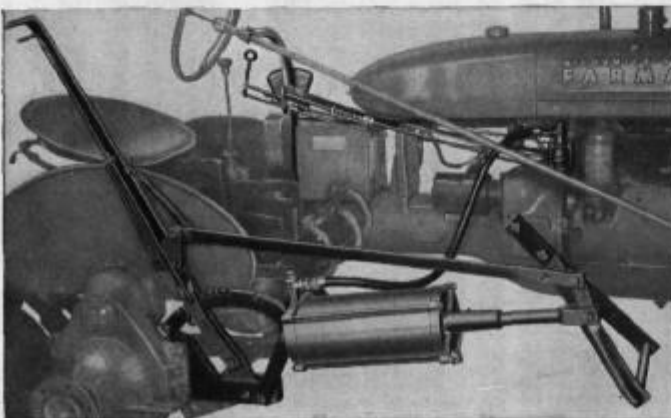
(For Farmall A, AV, B and BN Tractors)



Illust. 1 — Schematic diagram of pneumatic Lift-All available for Farmall A, AV, B, and BN tractors.



Illust. 2 — The pressure valve, mounted on the exhaust manifold, serves as a by-pass to divert exhaust gas to the Lift-All cylinder.



Illust. 3 — Pneumatic power-lift mounting for the A-147 disk plow. The control lever at left regulates the working depth of the plow.

The pneumatic Lift-All is available as a field installation for Farmall A, AV, B and BN tractors. It utilizes the exhaust gas of the engine to raise and lower the working units of various direct-connected implements. The pneumatic Lift-All consists of a pressure valve, control valve, hose, cylinder, and control lever.

How Pneumatic Lift-All Works

The pneumatic Lift-All operates from the pressure of the engine exhaust. It is ready to go to work any time the engine is running. Illustration 1, above, shows how the Lift-All operates. To lift the implement, pull the control handle back until the forward notch on rod hooks in the bracket on steering post. This closes the pressure valve (B) which diverts the exhaust gas into cylinder (C) and drives the piston out. The piston movement, through connecting linkage, raises the implement. As soon as the implement is raised the control lever is returned to the neutral position. This opens pressure valve (B). Control valve (E) drops on its seat and is held there by the pressure in cylinder (C). To lower the implement, push the control lever forward until the rear notch on the rod hooks in the bracket on the steering post. This opens the control valve (E), releases the pressure in cylinder (C), and allows the piston to return to its original position.

Specifications

No.	Description	Weight
15263 EDX	Pneumatic Lift-All for Farmalls A, AV, B and BN with gasoline engine. Includes cylinder and hose.	56 lb.
15264 EEX	Pneumatic Lift-All for Farmalls A, AV, B and BN with distillate engine. Includes cylinder and hose.	56 lb.



Farmall Special Equipment

Farmall tractors are used for so many different types of work and are called on to operate in so many different conditions that a considerable variety of special equipment is necessary to adapt them to the various jobs, operating conditions, and requirements of users.

The tractors, as regularly supplied, are equipped to perform straight drawbar work and to work with direct-connected implements under ordinary conditions. Beyond that, however, the special equipment requirements are so diverse that it is impractical to include any such equipment regularly on the tractor. In most cases the tractor buyer would be paying for accessories he

neither needed or wanted.

These special items can be installed on the tractor at any time. However, the most economical and most satisfactory procedure for the buyer of a new tractor is to specify the items of special equipment he wants on his tractor and to have them installed at the factory. In that way he saves the time and trouble of installation later, also the cost of the parts, if any, displaced by the special equipment.

On this and the following pages, the various items of special equipment available for Farmall tractors are described and, in most cases, illustrated.

Radiator Shutter and Heat Indicator

A radiator shutter and a heat indicator, regularly supplied on distillate tractors, are supplied on special order for gasoline and Diesel tractors.

The purpose of this equipment is to give the operator close control over engine operating temperature (especially valuable in the case of distillate tractors, which require a high operating temperature).

The shutter is regulated from the tractor seat and can be opened full (for running in warm weather), closed tight (for starting), or left in any intermediate position as conditions require. The heat indicator informs the operator of the engine temperature. The indicator dial is subdivided into three ranges — "cold," "run," and "hot."

Use of the shutter and heat indicator makes it possible to shorten the warm-up period and to keep the engine operating temperature within the proper range under varied conditions as, for example, when the load

is light, or the engine is idling, or the weather is cold. The attachment saves fuel, aids in preventing dilution of engine oil, and improves engine performance.

High-Altitude Pistons

Tractors intended for use in high altitudes should be equipped with special pistons to compensate for the loss of horsepower incidental to operation in the rarefied atmosphere of the mountains. The high-altitude pistons provide a higher compression ratio so that, when the smaller-volume fuel-air mixture is compressed, the pressure in the cylinder will approximate that at sea level with a correspondingly larger-volume mixture. One set of pistons is supplied for altitudes between 5,000 and 8,000 feet, and another set for altitudes above 8,000 feet.

Exhaust Muffler

The exhaust muffler reduces the snappy exhaust of Farmall engines to a quiet purr. It eliminates the possibility of noise fatigue. The muffler can be easily installed or removed if desired.



Illust. 2 — The muffler slips over the exhaust pipe and is held by a screw clamp.

Spark Arrester

The spark arrester, by imparting a cyclonic motion to the burnt exhaust gases, smothers and extinguishes any sparks — red-hot carbon particles — that may be thrown off. It reduces the fire hazard where tractors must be operated near inflammable material of any kind.



Illust. 1 — Radiator shutter and heat indicator are available as special equipment for gasoline and Diesel tractors.



Farmall Special Equipment

(Continued)

The spark arrester attaches readily to the exhaust pipe. Provision is made for attachment of a muffler to the top of the spark arrester.

Illust. 1 — A spark arrester virtually eliminates the fire hazard when operating near inflammable material of any kind.

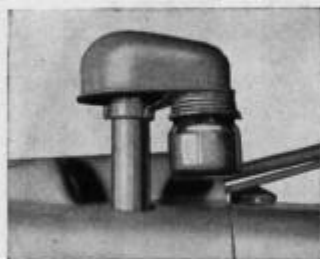


Air Pipe Extension

An air pipe extension is available for tractors which must be operated in dusty conditions. The extension places the air cleaner intake cap above the dust zone and cuts down the load on the air cleaner. With the air pipe extension installed, the air cleaner need not be cleaned oftener than once a day — the usual interval — even when the tractor is operated steadily in a cloud of dust. This attachment offers practical assurance that only dust-free air will reach the engine, which means longer engine life and continued good performance.

Collector Type Precleaner for Air Cleaner

This device is used in place of the regular air cleaner intake cap on tractors which are operated in extremely dusty conditions. The precleaner gives the incoming air a circular motion which causes the heavier dust particles to settle in a glass jar. It takes only a moment to unscrew and empty the jar as it fills up. Thus the precleaner lightens the load on the air cleaner, which need not be cleaned as often as would otherwise be necessary.

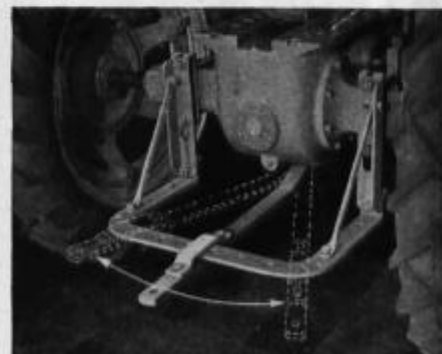


Illust. 2 — The collector type precleaner, which attaches to the air cleaner in place of the regular intake cap.

Swinging Drawbar

The swinging drawbar consists of a pull bar which attaches and pivots ahead of the rear axle and extends back over the drawbar cross-member. The pull bar is free to swing the full width of the drawbar. The drawbar cross-member serves as a guide, restricting both the sidewise and the up-and-down movements of the pull bar.

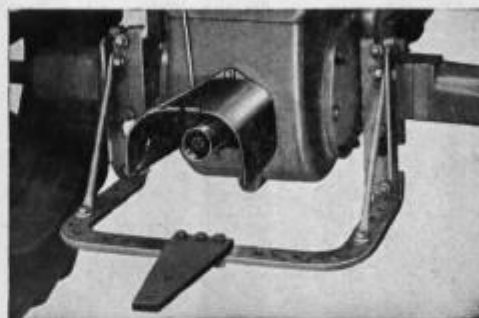
The swinging drawbar makes it easier to turn the tractor under load when pulling trail-behind implements such as disk harrows. The pulling point of the swinging drawbar is slightly ahead of the rear axle, permitting the tractor to turn without having to overcome the leverage exerted by the load when attached to a stationary drawbar. The swinging drawbar also facilitates steering on the straightaway because the load is free to swing without applying sidewise leverage and slewing the tractor off its course.



Illust. 3 — Swinging drawbar for the H and M Farmalls.

Power Take-Off

The power take-off consists of a shaft extending from the transmission through the differential housing and projecting at the rear of the tractor, where it can be connected to the mechanism of mowers, binders, and other machines commonly operated in this manner. The power take-off conforms to A.S.A.E. standard dimensions, which means it can be connected to any make or model of machine that has been built or converted to the same standard. Because of their high-clearance design Farmalls Super-AV, HV, MV, and MDV do not conform to the standard in all details.



Illust. 4 — The Power take-off, as it appears installed on Farmall H or M. The triangular drawbar extension is a part of the attachment.

Belt Pulley

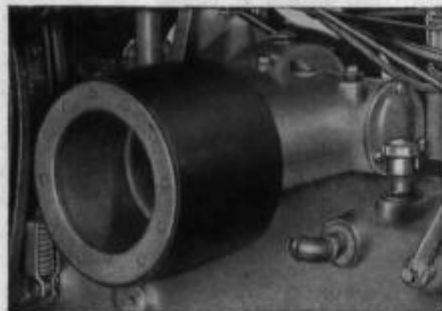
The belt pulley attachment consists of the pulley and its drive mechanism.

A belt pulley increases Farmall utility by making the power of the tractor engine available for the operation of belt-driven machines such as corn shellers, feed grinders, hammer mills, etc. The belt pulley drive, with a sprocket used in place of the pulley, also makes power conveniently available for driving the mechanism



Farmall Special Equipment

(Continued)



Illust. 1 — Belt pulley attachment for Farmall H and M tractors. Belt pulley attachments for the Super-A and C Farmalls are shown along with the power take-off attachments in other illustrations on this page.

of such mounted machines as the cotton picker and sugar beet harvester.

The belt pulley for Farmalls Super-A, Super-AV and C is mounted at the rear of the tractor and is driven from the same shaft as the power take-off.

The belt pulley for Farmalls H, HV, M, MV, MD, and MDV is mounted on the transmission case on the right side of the tractor. It is driven from a gear on the transmission drive shaft.

The pulley sizes available are shown in the following tabulation:

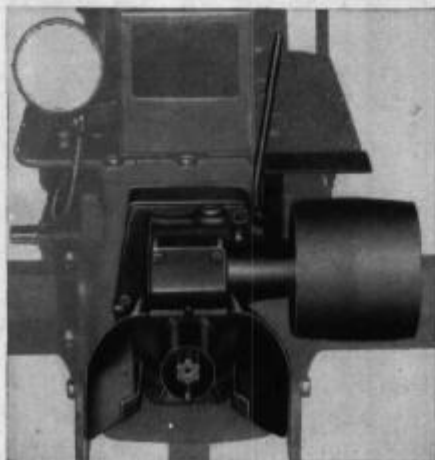
Farmalls Super-A, Super-AV and C	Farmalls H and HV	Farmalls M, MV, MD, and MDV
Diameter and face (in.)	Diameter and face (in.)	Diameter and face (in.)
*8½ x 6 10½ x 6½	*9¾ x 7½ 12 x 8½	*11 x 7½ 13 x 8½

*Indicates size of pulley supplied unless the other size is requested.



Illust. 2 — Belt pulley and power take-off on Farmall Super-A. The belt pulley is driven from the same shaft as the power take-off.

Illust. 3 — Belt pulley and power take-off on Farmall C tractor.



Pneumatic Tire Pump

An engine-operated tire pump is available on special order. This attachment consists of an adapter that screws into one of the spark plug holes, a 16-ft. hose, and a pressure gauge. One of the engine cylinders serves as the pumping unit and the other three cylinders provide the power. This tire pump can not be used with a Diesel engine.



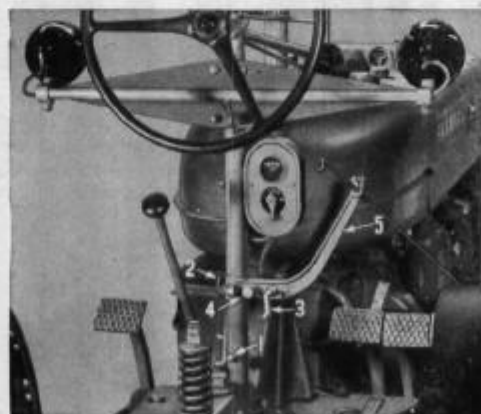
Illust. 4 — Engine-operated tire pump, showing hose, gauge, and adapter.

Electric Starter and Lights

All Farmalls can be equipped with electric starter and lights. Complete equipment consists of a generator, battery, starting motor, lamps, ammeter, cable harness, and switches.

Electric Lights

Electric lights greatly extend a tractor's usefulness. With strong, steady electric light fore and aft, the tractor can be used after dark and, if necessary, all night. The electric-lighted tractor can be run in shifts, if necessary, to make up for time lost because of bad weather. It can be used at night to take quick advantage of favorable weather or soil conditions, or to prevent loss of a crop overdue for harvest. Lighting equipment consists of two head lamps and one rear lamp.



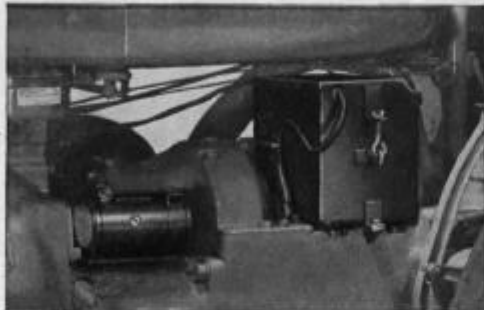
Illust. 5 — Location of two front lamps and instruments on Farmall M—Farmalls C and H are similar. Farmall Super-A has the lamps mounted at the front. The rear lamp on all Farmalls is attached at the rear. (Numbers indicate some of the Farmall M controls).

Farmall Special Equipment

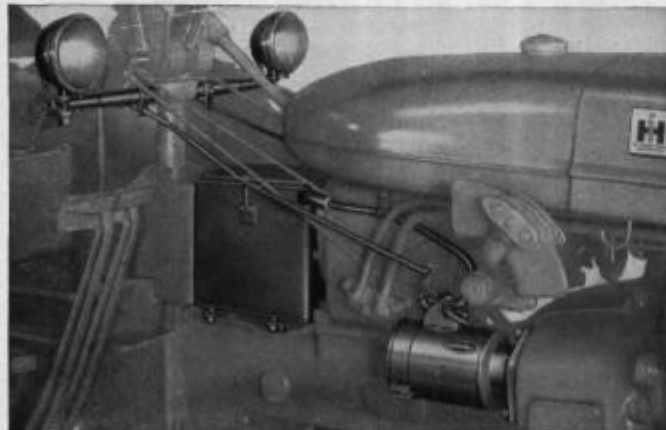
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Electric Starting

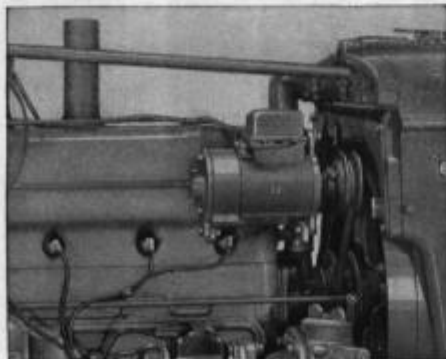
Electric starting is more than a mere convenience to the tractor operator. The electric starter is a fuel saver because it removes the temptation to idle the engine uselessly during "times out" in order to avoid having to hand-crank it when work is resumed. Finally, electric starting equipment eliminates the hand-cranking problem for younger or smaller members of the family who are otherwise entirely competent operators.



Illust. 1 — Position of the starting motor and battery on the Farmall M.



Illust. 2 — Electrical equipment on the Farmall C tractor.



Illust. 3 — Generator mounted on Farmall H and M tractors. It supplies electric energy for the starting and lighting equipment. It is V-belt driven from the double sheave on the fan hub.

Front Wheel Weights

Cast iron front wheel weights are available for all Farmall tractors. Either one or two weights can be attached to each front wheel. Wheel weights for the high-clearance HV, MV, and MDV Farmalls weigh 73 lbs. each; for all other Farmall models they weigh 42½ lbs.

Weight at the rear of the tractor causes the front wheels to bear lightly on the ground, impairing steerability. Front wheel weights are recommended for use as a front end counterbalance whenever heavy loads are to be superimposed on the drawbar or when heavy equipment is to be mounted on the rear of the tractor. On tractors equipped with the special "low-low" first gear the use of wheel weights is mandatory. Because of the safety angle, dealers should not deliver any such tractors without front wheel weights installed.



Illust. 4 — Front wheel weights can be attached singly or doubly.

Rear Wheel Weights

Slippage is reduced and the drawbar pull of a pneumatic-tired tractor is increased by adding weight to the drive wheels. Weight can be added by attaching cast iron disks to the rear wheels and/or putting liquid in the tire tubes. The increase in drawbar pull, with proportionate reduction of slippage, varies with the type of soil and the amount of weight added.

Cast iron rear wheel weights are available for all Farmall tractors. Either one weight or two weights can be attached to each rear wheel. Weights for Farmall Super-A weigh 132 lbs. each. For the Farmall C the weight is 140 lbs. each. For the Farmall H and M Series the weight is 145 lbs. each.



Illust. 5 — A single wheel weight mounted on a Farmall Super-A heavy type rear wheel.



Illust. 6 — Two wheel weights mounted on a Farmall Super-A regular rear wheel.



Farmall Special Equipment

(Continued)

Adjustable-Tread Wide Front Axle

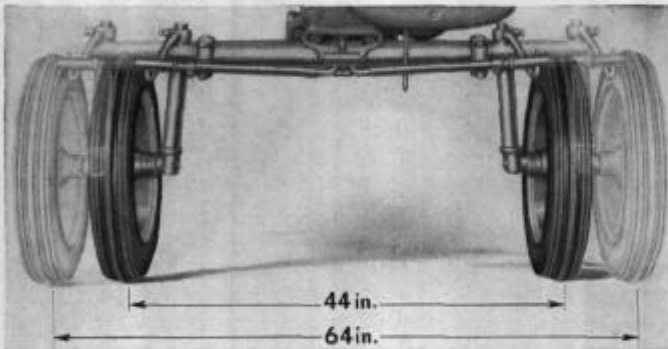
Adjustable-tread wide front axles are available for Farmalls Super-A, C, H, M, and MD. This type of axle adapts these models to work between narrow-spaced rows in such crops as potatoes, beets, and vegetables. Any of the wheel and tire equipment applicable to double front wheels can also be used with this attachment.

Adjustable-tread wide front axle attachments for the various model Farmalls provide the following treads:

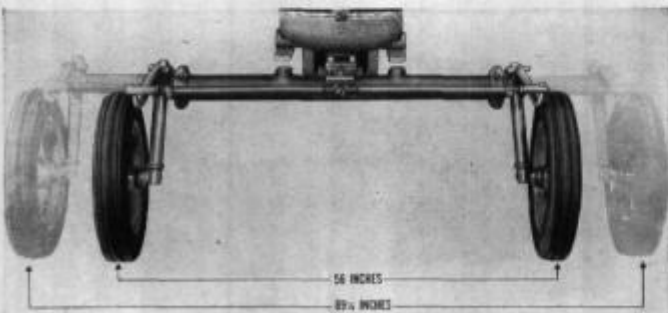
Farmall Super-A — 44 to 64 inches in 4-inch increments (can also be set at 62 inches). When using variable-tread front wheels various combinations can be obtained from 40 $\frac{3}{4}$ to 70 inches.

Farmall C — 56 to 89 $\frac{1}{4}$ inches in various row spacings obtainable with variable-tread front wheels. This attachment increases the wheelbase from 81 $\frac{1}{2}$ to 91 inches.

Farmalls H, M and MD — 57 to 81 inches in 4-inch increments and increases the wheelbase of the Farmalls H and M from 88 $\frac{3}{4}$ to 90 inches. The axle can also be set forward further to give a wheelbase of 100 $\frac{1}{2}$ inches. The longer wheelbase is used when the tractor is equipped with a cultivator.



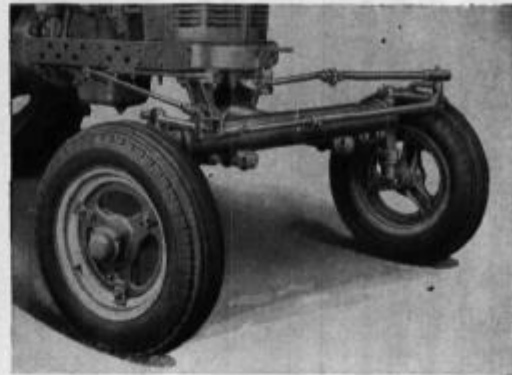
Illust. 1 — Adjustable-tread wide front axle for Farmall Super-A.



Illust. 2 — Adjustable-tread wide front axle for Farmall C.

Variable-Tread Front Wheels

This attachment, which consists of two specially designed front wheels, is applied to Farmalls which must travel on ridges. The attachment enables the



Illust. 3 — Adjustable-tread front axle attachment for Farmalls H, M, and MD.

operator to change the tread of the front wheels in conformity with the width of the ridges the tractor is to travel over, and thus to hold the tractor on a straight course with comparative ease. If these adjustable wheels are substituted for the regular wheels on Farmall tractors equipped with adjustable-tread front axle they provide a still wider range of tread adjustment. The



Illust. 4 — Variable tread double front wheels for Farmall C tractors.



Illust. 5 — Variable tread front wheels for Farmall H, M, and MD tractors.

different treads are obtained by changing the position of the tire rim on the wheel.

When the Farmall C is equipped with variable-tread double front wheels the treads obtainable are 6 $\frac{3}{4}$, 9 $\frac{1}{2}$, and 12 $\frac{3}{4}$ in.

When Farmalls H, M, and MD are equipped with these wheels, treads of 8, 11, 13 $\frac{1}{2}$, and 16 $\frac{1}{2}$ in. are obtainable.

Wide Tread Rear Axle

To widen the maximum rear wheel tread of Farmalls H, M, and MD from 88 to 100 in., two extra-long rear axles are provided as special equipment. These axles adapt these Farmall models to use in an extra wide variety of row spacings.



Farmall Special Equipment

(Continued)

Farmall C—Two sets of rear axles are available to increase the maximum rear wheel tread. One set increases the tread from 80 to 88 inches and one set which includes longer axle housings provides treads from 64 inches to 100 inches.



Illust. 1 — Wide tread rear axle for Farmalls H, M, and MD.

Rear Wheel Fenders

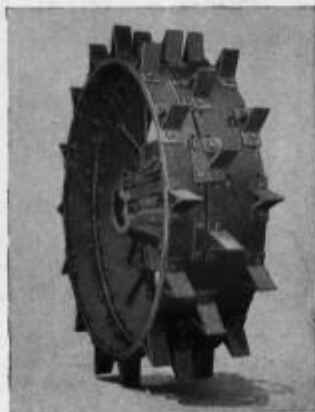
Fenders are not regular equipment on Farmalls C, H, HV, M, MV, MD, and MDV but can be obtained on special order. Orders for Farmalls H or M series fenders should state which direct-connected machines are to be used on the tractor, as in some cases an adapter plate is required to provide clearance for the implement.

Illust. 2 — Rear wheel fenders are supplied on special order for Farmalls C, H, HV, M, MV, MD, and MDV. Illustration shows close-up view of fender for Farmall H and method of attaching. Farmall C fenders are attached to the hexagon rear axle housing by U-bolts and the fenders can be moved in or out.



Rear Wheel Extension Rims

Six-inch extension rims are available for attachment to Farmall H, M, and MD tractors with 51-in. steel wheels. Each rim is held on the wheel by seven plates. When equipped with spade lugs (14 on each tire), these extension rims improve traction in soft and loose soils.



Illust. 3 — Six-inch extension rims are available for Farmalls with 51-in. steel wheels.

Spade and Spud Lugs

Spade and spud lugs in sets are available as attachments for Farmalls H, M, and MD as shown in the following tabulations:

Spade and Spud Lugs for Farmall H

Description of Lug	Size or Kind of Wheel	Number in Set	For Extension Rims Only
4 x 2 1/4 Spade	51 x 6 or 51 x 8	56	
4 x 3 Spade	51 x 6 or 51 x 8	56	
4 x 3 Spade	.....	28	Yes
5 x 2 1/2 Spade	51 x 6 or 51 x 8	56	
5 x 3 Spade	51 x 8	56	
5 x 3 Spade	.....	28	Yes
Double Spade	Channel Rim	28	
2 3/4 High Spud	51 x 6 or 51 x 8	112	

Spade and Spud Lugs for Farmalls M and MD

Description of Lug	Size or Kind of Wheel	Number in Set	For Extension Rims Only
4 x 2 1/2 Spade	51 x 8 or 51 x 10	56	
4 x 2 1/2 Spade	.....	28	Yes
5 x 3 Spade	51 x 8 or 51 x 10	56	
5 x 3 Spade	.....	28	Yes
6 x 3 Spade	51 x 10	56	
6 x 3 Spade	.....	28	Yes
Double Spade	Channel Rim	28	
Double Spade	Strengthened Channel Rim	32	
2 3/4 High Spud	51 x 8 or 51 x 10	112	



Farmall Special Equipment

(Continued)

High Skid Rings for Steel Front Wheels

Skid rings $2\frac{1}{2}$ in. high are available for use in place of the regular 2-in. rings on Farmalls H, M, and MD. The $2\frac{1}{2}$ -in. rings, by penetrating more deeply, assure more positive steering in loose ground, especially when the tractor is pulling a heavy load behind.

Illust. 1 — High skid rings as they appear on Farmall H or M regular front wheels.



Single Front Wheel

Single front wheels, either steel or pneumatic-tired, are available with bolster to replace double front wheels supplied on Farmalls H, M, and MD. Only pneumatic tired single front wheels are available for the Farmall C. A single wheel permits operation in narrowly spaced crops.

A single steel front wheel can be installed in place of (a) a double steel front wheel unit, (b) a double pneumatic front wheel unit, (c) a single pneumatic front wheel.

A single pneumatic front wheel can be installed in place of (a) a double steel front wheel unit, (b) a double pneumatic front wheel unit, (c) a single steel front wheel.

The single steel wheel for Farmalls H, M, and MD is 26 in. in diameter and is equipped with skid ring.

The single pneumatic wheel for Farmall H is supplied in two sizes, less tire and tube, as follows: 6.50 x 16 in. and 7.50 x 10 in.

The single pneumatic wheel for Farmalls M and MD is supplied in two sizes, less tire and tube, as follows: 7.50 x 16 in. and 9.00 x 10 in.

For the Farmall C either 7.50-10 or 6.00-12-in. pneumatic tired single front wheels are available.



Illust. 2 — Single pneumatic front wheel attachments are supplied for Farmalls H, M, and MD. Single steel front wheels are also available.

Reverse-Flow 6-Blade Fan

A 6-blade reverse-flow fan is available in place of the regular 4-blade fan. This fan, by reversing the flow

of air through the radiator, reduces or eliminates the accumulation of chaff and trash on the radiator.

Low-Low Speed Gears

Special gears, to replace the regular first and reverse gears in Farmalls H, M, and MD, give these tractors an extra-low first gear speed of $1\frac{5}{8}$ miles per hour (in place of the regular $2\frac{5}{8}$ miles per hour) and an extra-low reverse speed of $1\frac{7}{8}$ miles per hour (in place of the regular 3 miles per hour).

This low first-gear speed is advantageous when operating such machines as harvester-threshers and corn pickers in heavy crops.

Because of the increased torque on the rear axle, tractors equipped with the extra-low first gear should in every case be equipped with front wheel weights to increase the stability of the tractor.

7 Miles Per Hour Fourth Speed

A special set of gears can be installed in Farmalls H, M, and MD to give a fourth transmission speed of 7 miles per hour in place of the regular $5\frac{3}{8}$ miles per hour for the Farmall H and $5\frac{1}{8}$ miles per hour for Farmalls M and MD. This high fourth speed cannot be used in steel wheel tractors.

The 7 miles per hour speed is preferred by many Farmall owners for light field operations such as pulling a rotary hoe, light peg tooth harrows, etc. It is also useful for medium-heavy hauling.

Overtires, and Overtire With Rim

This equipment, for use with steel wheel Farmalls H, M, and MD, consists of a T-shaped smooth steel tire that bolts to the outside row of spade lugs. This equipment permits running the tractor on the highway.

The overtire for lugs 4 and 5 in. high is $3\frac{1}{2}$ in. wide. For Farmall M tractors equipped with 6-in. lugs there is an overtire 4 in. wide. For operators who require still wider equipment there is a 6-in. rim which fits over and attaches to the overtire.



Illust. 3 — This $3\frac{1}{2}$ -in. overtire, for steel wheel tractors, permits running the tractor on the highway. A 6-in. rim, which fits over the overtire, is also available.

Exhaust Pipe Extension

An extension for the exhaust pipe of Farmalls H, HV, M, MV, MD, and MDV is available. The extension is a 30-in. length of pipe which slips over and is clamped

Farmall Special Equipment

(Continued)

to the exhaust pipe or to the top of a spark arrester or muffler if used. The extension carries the exhaust well above the operator's head.

Cultivator Shifter Lever

This lever must be attached to the upper bolster pivot shaft of Farmalls H, HV, M, MV, MD and MDV when a pivot gang cultivator is used. The lever makes possible automatic sidewise pivoting of the gangs as the steering wheel is turned.

Adjustable Drawbar

This attachment, consisting of a lever and quadrant, is used in connection with the swinging drawbar on any Farmall except Farmalls Super-A and C. The attachment makes it possible to adjust the hitch point horizontally from the tractor seat. It is very helpful when plowing on hillsides because it permits adjusting the hitch to keep the plow cutting a full width furrow.



Illust. 1 — The adjustable drawbar attachment is useful in hillside plowing.

Hydraulic Shock Absorbing Seat (For Farmall H and M Series Tractors)

Here is a seat that enables the operator to ride as comfortably as relaxing at home in any easy chair. It takes the jolts and jars out of roughest going . . . gives the operator "feather-cushion" comfort so that he remains unfatigued even after a long day's work. Users acclaim it as the smoothest-riding, most comfortable and satisfactory seat ever put on a tractor.

Here Are The Reasons Why

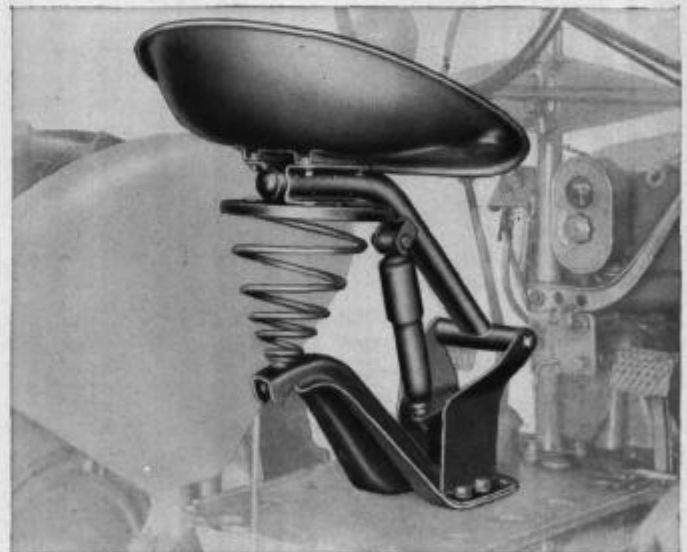
Wide, Comfortable Full-Support Seat—Supports large or small individuals equally well. Cushioned with felt and protected by a weather-proof rubberized covering which prevents sliding about and is a non-conductor of heat or cold.

Double-Action Hydraulic Shock Absorber — Cushions the up-and-down jolts and eliminates "bouncing" when traveling over rough ground.

Variable-Rate Coil Spring — Working in conjunction with the hydraulic shock absorber it assures the same comfortable ride to a small boy or to a large man regardless of their weight.

Anti-Sway Bar with Rubber Grommets — Eliminates the side sways and lurches which are so detrimental to the back. Rubber grommets which never require attention provide additional cushioning.

Seat Position Adjustable — The seat is readily installed and can be positioned forward or back to suit operator's convenience.



Illust. 2 — Hydraulic shock-absorbing seat can be easily installed in place of regular seat.

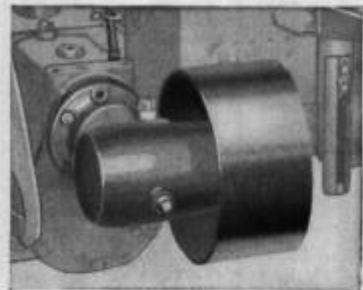


Farmall Cub Special Equipment

Belt Pulley

The belt pulley attachment, which consists of the pulley and its drive mechanism, increases Cub utility by making the power of the tractor engine available for the operation of belt-driven machines such as corn shellers, feed grinders, and hammer mills. The belt pulley for the Cub is mounted on the rear of the tractor and is driven from the power take-off shaft.

The regular pulley has a 9-inch diameter with a $4\frac{1}{2}$ -inch face. Shaft speed is 1322 r.p.m., which gives a belt speed of 3114 feet per minute.



An optional pulley is available which has a $7\frac{5}{8}$ -inch diameter with a $4\frac{1}{2}$ -inch face. The shaft speed of 1322 r.p.m. gives a belt speed of 2638 feet per minute.

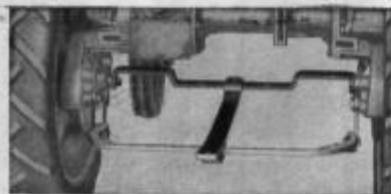
Power Take-Off



The power take-off consists of a shaft extending from the transmission through the differential housing and projecting at the rear of the tractor, where it can be connected to a mower mechanism or any other machine operated in this manner. The power take-off has a speed of 1600 r.p.m.

Swinging Drawbar

The swinging drawbar is free to swing the full width of the regular drawbar, which makes it easier to turn the tractor under load when pulling trail-behind implements such as disk harrows, and it makes possible shorter turns. It also facilitates steering on the straight-away when the tractor is pulling a heavy load because the load exerts less



sidewise pull on the tractor. This attachment is especially desirable when working small, irregularly shaped fields.

Upholstered Seat

This deeply-upholstered seat offers the maximum in riding comfort. The thick layer of hair-felt cushions the ride, and the waterproof rubber-impregnated canvas cover minimizes any tendency to slip in the seat.

Exhaust Muffler

An exhaust muffler is available for locations or conditions requiring quieter operation of the tractor. The muffler, which attaches easily to the exhaust pipe, reduces the sound of the exhaust to a quiet purr.

Spark Arrester

The spark arrester smothers and extinguishes any sparks that may be thrown off. It completely eliminates the possibility of fire when operating near inflammable material. The muffler is attached to the exhaust pipe in the same manner as it attaches to the arrester.



Front Wheel Weights

Thirty-pound front wheel weights, either one or two, can be attached to each front wheel. To increase steerability, front wheel weights are recommended for use as a front-end counterbalance whenever heavy loads are to be superimposed on the drawbar or when heavy equipment is to be mounted on the rear end of the tractor.



Rear Wheel Weights

To reduce slippage and increase drawbar pull, 145-lb. wheel weights, either one or two, can be attached to each drive wheel. The increase in drawbar pull, with the proportionate reduction of slippage, varies with the type of soil.



Electric Starting and Lighting

Electric starting and lighting are more than a mere convenience; they speed up operations and extend tractor usefulness.

Detachable Seat Pad

A detachable hair-felt seat pad, covered by waterproof, rubber-impregnated canvas, is available for application in the field. It is easily installed on the regular metal seat and can be used to recover the upholstered seat.

Standard Farm Tractors

Standard tractors are a type which is popular wherever crops are grown broadcast style and not in rows, as in the grain growing sections of the country. These tractors are used altogether for drawbar work with pull-behind equipment and for heavy-duty belt work. Frequently the pull-behind equipment . . . grain binder, small combine, mower, hay baler, terracer, etc. . . is driven through the tractor's power take-off. These tractors, through a well-placed, accessible belt pulley, drive stationary threshers, hammer mills, and other machines with high efficiency.

Although, as stated, Standard tractors are used mainly on grain farms they are often preferred for the heavy plowing and tillage operations on the larger row crop farms. On these farms Farmalls, with mounted equipment, handle the planting and cultivating.

International Harvester's line of Standard farm tractors comprises five models and three sizes — the two-plow W-4, the three-plow W-6 and WD-6, and the

four-plow W-9 and WD-9. The W-4, W-6, and W-9 are regularly supplied with gasoline engine power, but are also available with distillate-gasoline engines. The WD-6 and WD-9 are powered with International Harvester Diesel engines with the well-known built-in all-weather starting system.

The Standard tractors, regularly equipped with pneumatic tires, five-speed transmission, and adjustable governor control, embody numerous features developed by Harvester tractor engineers in their efforts to increase the efficiency and lower the cost of tractor operation.

Some of these features are shown on the "Outstanding Features" pages which follow closely. Other features, as indicated in the tabulation on those pages, are pictured and described in the "General Tractor Features" section which follows the tractor section. Under "General Tractor Features" will be found, for example, a detailed explanation of engine and engine accessory features, both carburetor type and Diesel.

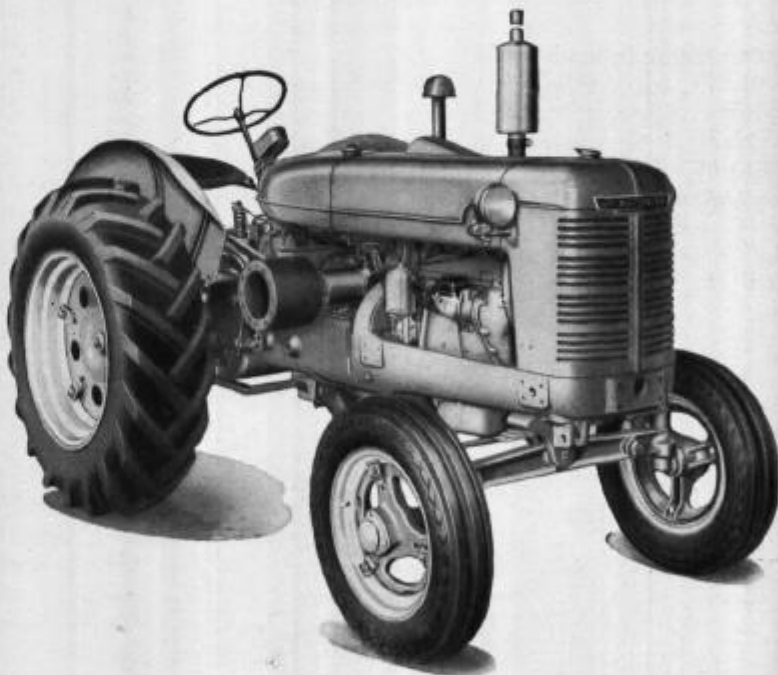
Model W-4

Model W-4 is regularly a pneumatic-tired two-plow tractor powered with a gasoline engine but, for the benefit of purchasers who wish to use a lower grade of fuel, it is also available on special order with a distillate-gasoline engine.

Both engines are of Harvester valve-in-head design, which assures maximum horsepower per cubic inch of displacement plus maximum accessibility for valve adjustment. Other features of these and the larger "W" tractor carburetor type engines are the variable speed governor, the replaceable cylinder sleeves, and the pressure system of lubrication by which oil is forced continuously to all the principal bearing surfaces.

High drawbar efficiency is assured in the W-4 by the five forward transmission speeds and the wide range of engine working speeds obtainable by the operator through the manually adjusted variable speed governor control. Throughout the engine's working range the governor permits the throttle to open to whatever extent is necessary up to maximum in order to maintain engine r.p.m. at the level set by the operator. As a result, a high percentage of the engine's maximum pulling power is available even at reduced engine speeds.

With a choice of both transmission speeds and engine speeds, the operator can obtain any desired combination of traveling speed and drawbar pull. He can operate at low engine speeds but with plenty of pulling power. He can slow the tractor down for turns and make them easily without shifting gears. Also he can operate belt-driven machines at or close to their rated speeds under full governor control.



Illust. 1 — Model W-4 tractor, equipped with belt pulley, muffler, and electric starting and lighting.

Daily work capacity of the W-4 is as follows: It will plow 7 to 12 acres; tandem-disk 25 to 30 acres; seed (10-foot drill) 35 acres; harrow (peg tooth) upwards of 70 acres; harvest (tractor binder) 30 to 35 acres; combine (depending on width of cut) 10 to 25 acres; field-cultivate 20 to 25 acres. On the belt the W-4 will handle a 22-inch thresher in average conditions, medium-size hammer mill, ensilage cutter, etc. Daily fuel consumption is from 15 to 20 gallons.



Standard Farm Tractors

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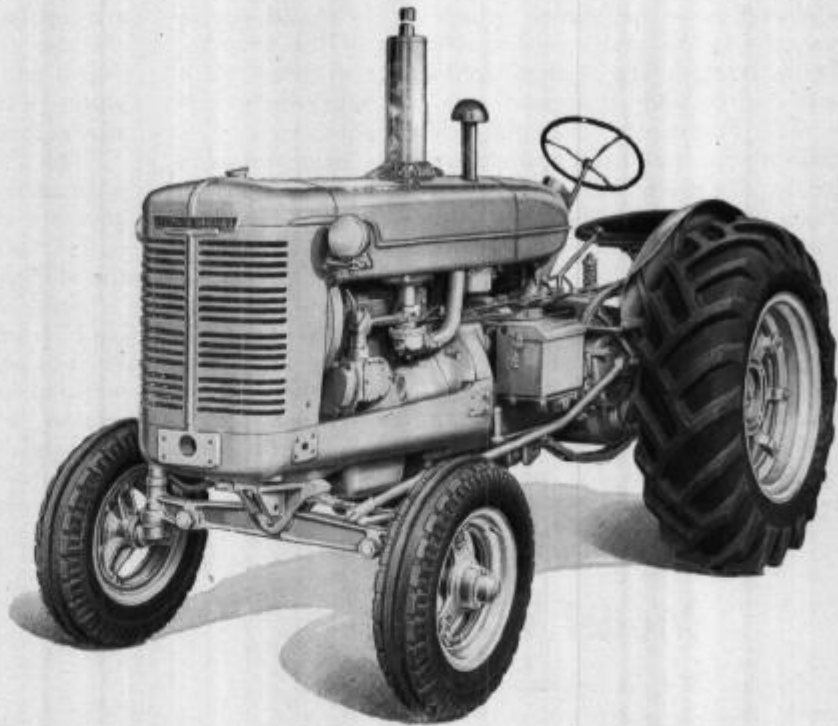
Model W-6

Every good feature of the W-4 tractor is duplicated in the W-6 but on a larger scale. Here is power to pull three stubble plows, drive a 28-inch thresher, and pull a 10-foot field cultivator.

The W-6's $3\frac{7}{8}$ by $5\frac{1}{4}$ gasoline engine has all the fuel-saving characteristics of the W-4 engine, with the same high power output per gallon of fuel consumed. The W-6, like the W-4, can also be specially supplied with a distillate-gasoline engine when the buyer prefers to use that grade of fuel. By ordering the engine to suit the fuel, the tractor owner obtains maximum power and efficiency from the fuel of his choice.

Quick adaptability to varying drawbar requirements is assured through the five-speed transmission and adjustable governor. Every gradation of drawbar pull and traveling speed is possible, from slow, hard lugging to high-speed hauling.

Daily work capacity of the W-6 is as follows: plowing, 9 to 13 acres; tandem-disking, 30 to 40 acres; drilling (14-foot), 40 to 60 acres; field-cultivating, 30 to 40 acres; harrowing (peg tooth), 80 acres and up. On the belt the W-6 will handle a 28-inch thresher in average conditions and the larger-size hammer mills, ensilage cutters, etc. Daily fuel consumption is from 20 to 25 gallons.



Illust. 1 — Model W-6 tractor, equipped with muffler and electric starting and lighting.

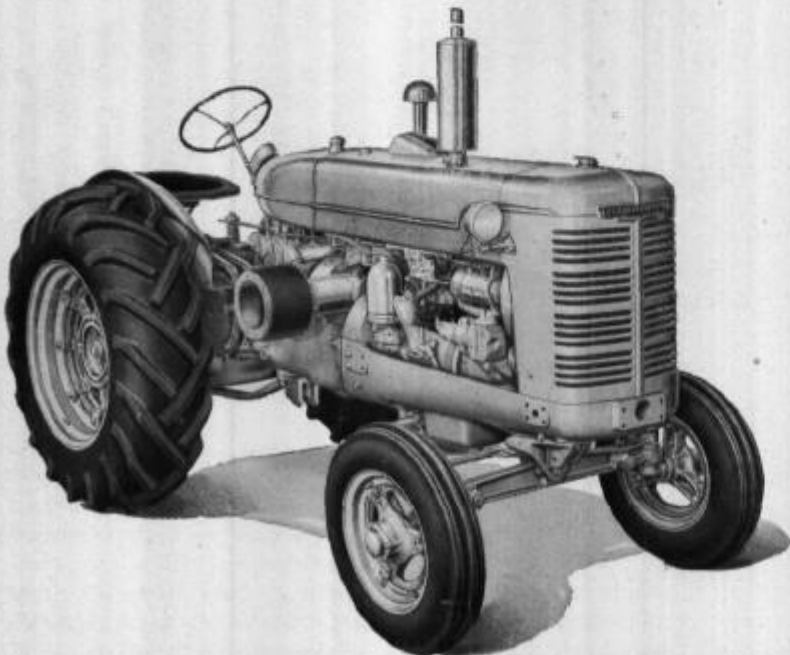
Model WD-6

Model WD-6 is the same tractor as the W-6 except for the engine. The WD-6 is powered with International Harvester's "6 series" Diesel engine with the famous all-weather starting system. This full-Diesel engine can be started with conventional automotive type electric starting equipment or, if preferred, can be cranked by hand.

Farmers who have fairly continuous use for tractor power should investigate the advisability of "going Diesel." Diesel fuel economy is notable. The Diesel not only uses lower-priced fuel but uses less fuel than a conventional engine of the same size. Moreover, it delivers more horsepower hours per gallon!

Operation of the Diesel WD-6 is similar in almost every respect to that of the W-6. The variable speed governor control, for example, is operated in exactly the same way on the WD-6 Diesel as on the gasoline W-6. The only difference is that in one case the governor acts on the Diesel injection pump and in the other case on the carburetor.

As the WD-6 is a companion tractor to the W-6, its daily work capacity is the same as that given for the W-6 (above). Daily fuel consumption, though, is less, amounting only to 15 to 20 gallons.



Illust. 2 — Model WD-6 tractor, equipped with muffler, belt pulley, and electric starting and lighting.



Standard Farm Tractors

(Continued)

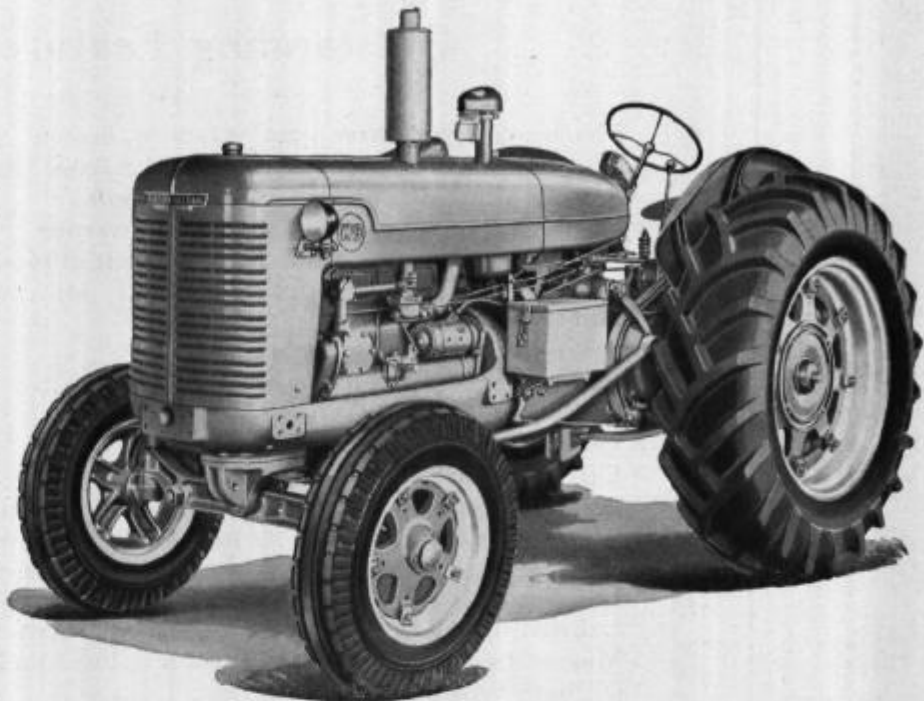
Model W-9

Model W-9, rated a four-plow tractor, is the largest of the three gasoline Standard tractors. It is intended for the man who farms a large acreage and requires a big tractor in order to overcome weather handicaps and get through his seasonal operations on schedule.

The W-9, which can be specially supplied with a distillate-gasoline engine if wanted, was designed to plow 15 to 20 acres a day under most conditions and meet other comparable drawbar and belt requirements with a comfortable margin of reserve power.

This is a tractor for the man whose operations call for the use of large-capacity implements and power enough to operate them with full efficiency in all normal operating conditions. Like all Standard rubber-tired tractors, the W-9 has a 5-speed transmission.

Daily work capacity of the big W-9 is: plowing, 15 to 20 acres; tandem-disking, 35 to 45 acres; peg tooth harrowing (20-foot), upwards of 80 acres; field-cultivating, 35 to 45 acres; seeding (depending on drill size), 40 to 100 acres; and combining (depending on size), 30 to 50 acres. On the belt the W-9 will drive a 32-inch thresher and sometimes larger, large-size hammer mills, ensilage cutters, etc. Daily fuel consumption is 30 to 35 gallons.



Illust. 1 — Model W-9 tractor, equipped with muffler, electric starting and lighting, precleaner, and gear shifter extension attachment.

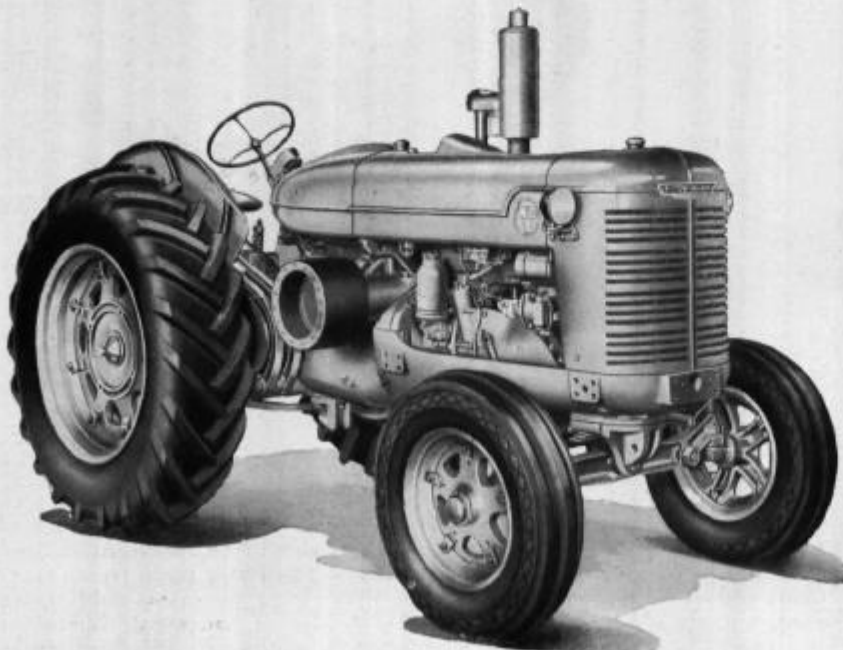
Model WD-9

Model WD-9, companion tractor of the four-plow W-9, is the same tractor throughout as the W-9 except for the engine. The WD-9 is powered with International Harvester's "9 series" Diesel engine with the built-in all-weather starting system.

It is as easy to start an International Harvester Diesel as to start a gasoline engine of the same size . . . because in starting an International Harvester Diesel the operator converts it temporarily into a low-compression gasoline engine, complete with spark plugs and magneto. As soon as the cylinders and combustion chambers are warmed, the operator pulls a lever, instantly converting the engine to full-Diesel compression-ignition operation. The direct-flame warm-up run on gasoline conditions the engine quickly for Diesel operation. Operators appreciate this system on cold winter mornings especially.

The WD-9 Diesel tractor answers the power problem of the man who is farming a large acreage and who has regular use for a tractor throughout the year. In extended and continuous operations Diesel economy adds up fast.

In all other respects the WD-9 and W-9 tractors are the same, including the daily work capacity (given above). Daily fuel consumption of the WD-9 is 20 to 25 gallons.



Illust. 2 — Model WD-9 tractor, equipped with muffler, precleaner, belt pulley, and electric starting and lighting.



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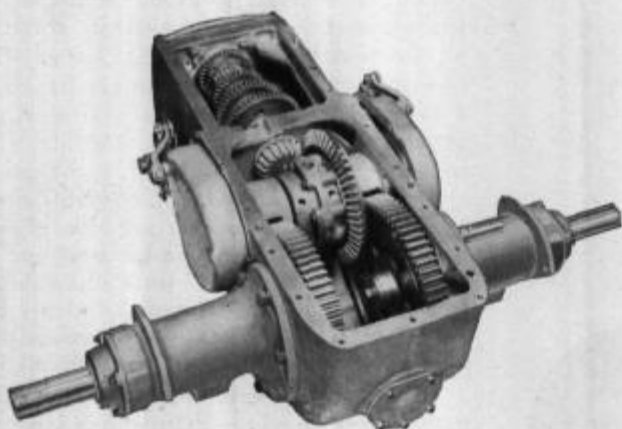
Standard Farm Tractors

(Continued)

Outstanding Features

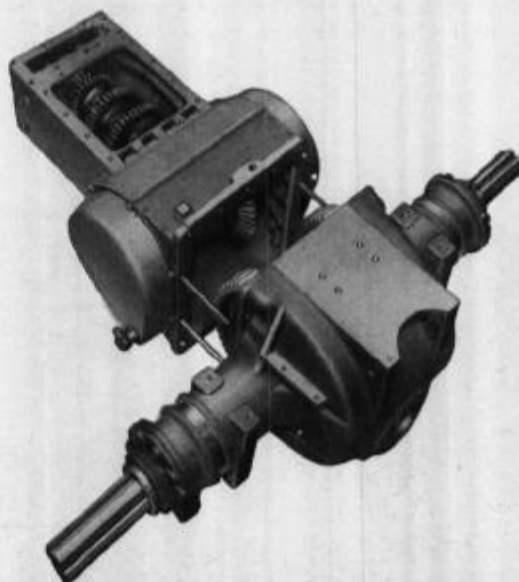
- Five models and three sizes — 2-plow, 3-plow, 4-plow
 - * Three types of engine — gasoline, distillate, Diesel
 - 5-speed transmission — 5 forward speeds
 - * Manually controlled variable speed governor
 - Convenient controls, including differential type steering brakes
 - Roomy platform and comfortable seat, adjustable for leg room and for stand-up driving
 - * Valve-in-head engine design
 - * Replaceable cylinder sleeves
 - * Pressure lubrication
 - * Quick, all-weather Diesel starting
 - * Efficient combustion chamber design
 - * Precision type main and connecting rod bearings
 - * Crankshaft bearing surfaces induction-hardened
 - * Efficient cooling system — water pump, thermostat, full-length cylinder water jackets
 - * Lubricating oil filter with replaceable element
 - * Magneto with automatic impulse coupling and long-life magnet
 - * Oil bath type air cleaner
 - * International single-plunger Diesel injection pump
 - * Spring-loaded rawhide dust seals
 - * Anti-friction ball and roller bearings
- * For detailed explanation see General Tractor Features.

W-4, W-6, and WD-6 Transmission



Illust. 1 — The five-speed transmissions in the "4" and "6" series Standard tractors are identical except as to size. They are housed in a single main frame casting. Gears and pinions are drop-forged of alloy steel, precision-machined, and carburized. They are also heat-treated to leave them extremely hard on the contact surfaces and relatively soft and shock-absorbent inside.

W-9 and WD-9 Transmission



Illust. 2 — W-9 and WD-9 transmission, differential, and final drive gears are housed in two heavy main frame castings (here separated for illustration purposes) made extra strong to withstand the stresses of heavy-duty operation and keep all working parts in alignment. Shafts turn in ball or roller bearings, a number of which are set in bearing cages.



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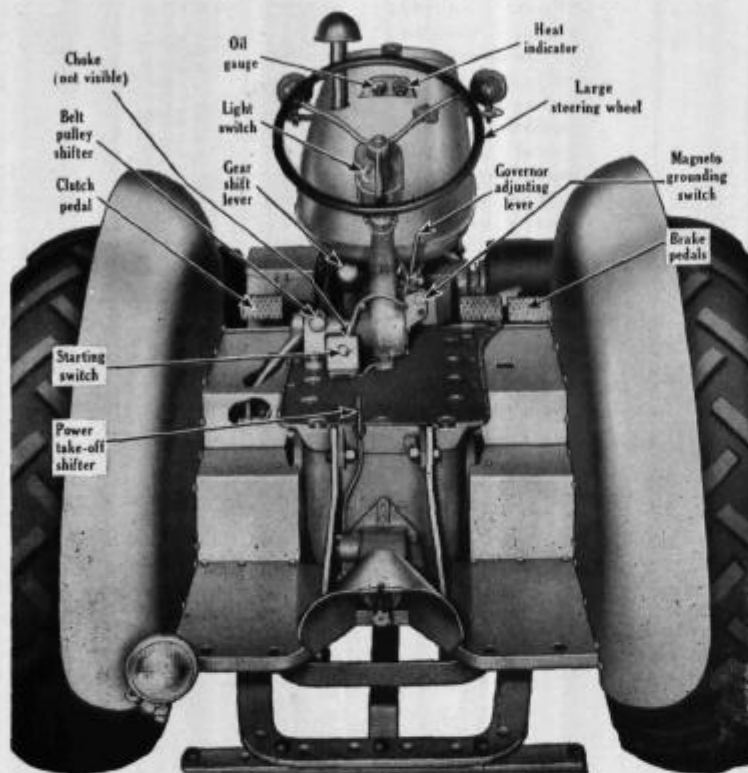


Standard Farm Tractors

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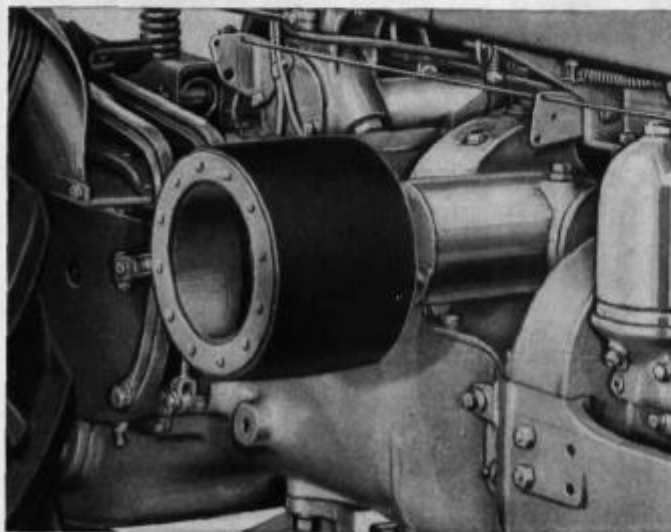
Outstanding Features (Continued)

Convenient Controls



Illust. 1— In this rear view of the W-4 Standard tractor the seat has been removed to show the roomy driving compartment and the well-placed controls, all of which can be reached without difficulty by the operator's hand or foot while he is sitting comfortably in the seat. Note the interlocking brake pedals, also the clear view of the engine temperature gauge and the oil pressure gauge.

Accessible Belt Pulley



Illust. 4— (At right) The hand points to the enlarged end of the front axle, which houses the ball bearing on which the steering knuckle pivots. Ball bearings on the forged steel steering knuckles and on the steering shaft permit free movement of these parts and make it easy for the operator to turn the front wheels.



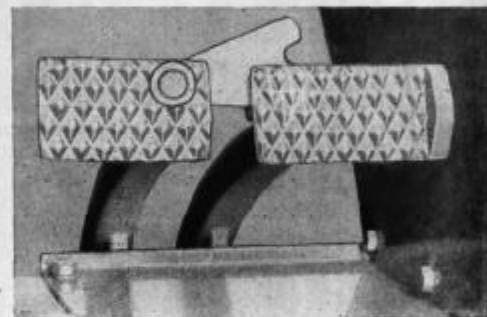
Illust. 5— (At left) A well-liked feature of these tractors is the accessibility of the belt pulley. Plenty of room to get the belt on and off. It is in the right position, too. When lining up and tightening, the operator has a perfect view from the seat.

Handy Front Drawbar



Illust. 2— Owners using their tractors for miscellaneous work, like stringing fence, etc., frequently want to pull from the front. They find this "front drawbar" real handy.

Useful Brakes



Illust. 3— Used singly, the brakes provide extra short turning in the field. Interlocked, they provide equalized braking power on the road and for "parking" on inclines.

Free-Turning Steering Knuckles



INTERNATIONAL HARVESTER



Standard Farm Tractors

(Continued)

Outstanding Features (Continued)

Comfortable Stand-Up Driving



Illust. 1 — Even though a tractor seat is comfortable and adjustable the operator occasionally wants to drive the tractor standing up. There is plenty of room for stand-up driving on the "W" tractors. The seat tilts back out of the way and automatically relocks itself in the normal position.

Adjustable Governor



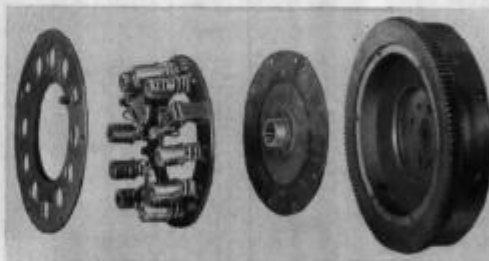
Illust. 2 — With one hand on the large, easily held steering wheel and the other on the governor control lever, the operator selects the most advantageous engine speed for the transmission speed he is using. Maximum drawbar pull for each transmission speed is obtainable.

Simple Power Take-Off Shifter

Illust. 3 — (At right) Operation of the power take-off is simple. The operator depresses the clutch pedal and pulls up (to engage) or pushes down (to disengage) on the power take-off shifter just beneath the seat (see hand). Note: the power take-off can be operated independently of the belt pulley.



Single-Plate Clutch



Illust. 4 (Above) and 5 (at right) — Compact unit design makes the Standard tractor clutches easily accessible for inspection or adjustment and quickly removable for service work if necessary. Clutch springs (which vary in number according to model) are more than adequate in number and size to apply uniform pressure to friction plate and disk and give smooth but positive engagement under all loads. W-6, WD-6 clutch shown.



Easy-To-Start Diesel

Illust. 6 — (Right) With his right hand on the variable speed governor control lever and his left on the "Diesel conversion" lever, the operator of this Diesel Standard tractor is here switching from low-compression gasoline starting to full-Diesel operation following the warm-up run.



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Standard Farm Tractors

(Continued)

REGULAR EQUIPMENT — W-4, W-6, and W-9 tractors are regularly supplied with gasoline engine power (but may be specially ordered with distillate-gasoline engines). The WD-6 and WD-9 are Diesel-powered. Other regular equipment includes: Pneumatic tires. High-tension magneto with automatic impulse coupling (for starting purposes only on Diesel). Variable speed governor controlled from

the seat. Oil bath type air cleaner. Oil filter with replaceable element. Floating screen oil pump intake. Fuel strainer. Heat indicator. Replaceable cylinder sleeves. Individual enclosed external contracting foot brakes operating on differential shafts. Spring-loaded clutch. Front drawbar. Adjustable flat-bar type drawbar. Tiltback waterproof upholstered seat, adjustable forward and back.

SPECIAL EQUIPMENT — Special equipment for Standard tractors is as follows: Steel wheels with spade lugs. Distillate-gasoline engines, complete with radiator shutter, in place of the regular gasoline. Radiator shutter for gasoline and Diesel tractors. Engine-operated tire pump. Belt pulley. Power take-off. Electric starting and

lighting. Swinging drawbar. Exhaust muffler. Spark arrester. Pre-cleaner. Gear shifter extension for W-9 and WD-9. Wheel weights, front and rear. (Note: Special pistons for high-altitude operation, 5,000 and 8,000 feet, are optional equipment on W-4, W-6, and W-9 tractors.)

Specifications

	W-4	W-6	WD-6	W-9	WD-9
*Maximum Belt H.P., Gasoline.....	27.89	38.74	.....	52.36	.....
*Maximum Belt H.P., Distillate.....	24.87	36.69	.....	49.00	.....
*Maximum Belt H.P., Diesel.....	.....	.....	36.38	.....	49.17
*Maximum Drawbar H.P., Gasoline.....	25.67	33.81	.....	47.06	.....
*Maximum Drawbar H.P., Distillate.....	22.49	32.80	.....	44.59	.....
*Maximum Drawbar H.P., Diesel.....	.....	.....	31.38	.....	44.78
Engine Fuel, regular equipment.....	Gasoline	Gasoline	Diesel	Gasoline	Diesel
Rated Full Load Governed Engine Speed, R.P.M.....	1650	1450	1450	1500	1500
Variable Speed Governor Controlled from Seat, Full Load Engine Speed Range, R.P.M.....	1000-1650	950-1450	800-1450	900-1500	800-1500
Number of Cylinders.....	4	4	4	4	4
Bore and Stroke, inches.....	3 $\frac{3}{8}$ by 4 $\frac{1}{4}$	3 $\frac{1}{8}$ by 5 $\frac{1}{4}$	3 $\frac{3}{8}$ by 5 $\frac{1}{4}$	4.4 by 5.5	4.4 by 5.5
Replaceable Cylinder Sleeves.....	yes	yes	yes	yes	yes
Piston Displacement, cubic inches.....	152.1	247.7	247.7	334.5	334.5
Piston Speed, feet per minute.....	1169	1269	1269	1375	1375
Compression Ratio, Gasoline or Diesel.....	5.9 to 1	5.65 to 1	14.2 to 1	5.4 to 1	14.4 to 1
Engine Lubrication, Type.....	Pressure	Pressure	Pressure	Pressure	Pressure
Cooling System, Type.....	Pump, Thermostat	Pump, Thermostat	Pump, Thermostat	Pump, Thermostat	Pump, Thermostat
Engine Clutch (Single Plate, Spring-loaded), Diameter, inches.....	10	11	11	12	12
Type of Steering (18 inch Wheel).....	Worm Gear Enclosed	Worm Gear Enclosed	Worm Gear Enclosed	Cam and Lever	Cam and Lever
**Front Wheels, Pneumatic Tire Size.....	5.50-16	6.00-16	6.00-16	7.50-18	7.50-18
**Rear Wheels, Pneumatic Tire Size.....	12-26	13-30	13-30	14-34	14-34
Forward Speeds, miles per hour.....	2 $\frac{3}{8}$, 3 $\frac{1}{8}$, 4, 5, 14 $\frac{1}{8}$	2 $\frac{3}{8}$, 3 $\frac{1}{8}$, 4 $\frac{3}{8}$, 5 $\frac{3}{8}$, 15 $\frac{1}{8}$	2 $\frac{3}{8}$, 3 $\frac{1}{8}$, 4 $\frac{3}{8}$, 5 $\frac{3}{8}$, 15 $\frac{1}{8}$	2 $\frac{3}{8}$, 3 $\frac{1}{8}$, 4 $\frac{3}{8}$, 5 $\frac{3}{8}$, 16 $\frac{1}{4}$	2 $\frac{3}{8}$, 3 $\frac{1}{8}$, 4 $\frac{3}{8}$, 5 $\frac{3}{8}$, 16 $\frac{1}{4}$
Reverse Speed, miles per hour.....	2 $\frac{3}{8}$	2 $\frac{3}{8}$	2 $\frac{3}{8}$	3	3
Front Wheel Tread, C. to C., inches.....	45 $\frac{3}{8}$	46 $\frac{3}{4}$	46 $\frac{3}{4}$	52	52
Rear Wheel Tread, C. to C., inches.....	52	55	55	60	60
Wheelbase, inches.....	66 $\frac{3}{4}$	76	76	83 $\frac{3}{8}$	83 $\frac{3}{8}$
Length Overall, inches.....	114	125	125	134 $\frac{1}{4}$	134 $\frac{1}{4}$
Width Overall (over rear tires), inches.....	65 $\frac{1}{4}$	69 $\frac{3}{4}$	69 $\frac{3}{4}$	75 $\frac{3}{4}$	75 $\frac{3}{4}$
Height Overall, without muffler, inches.....	62 $\frac{3}{8}$	70 $\frac{1}{8}$	70	72 $\frac{3}{4}$	72 $\frac{3}{4}$
Height Overall, with muffler, inches.....	80 $\frac{1}{2}$	90 $\frac{3}{4}$	89 $\frac{1}{2}$	83 $\frac{1}{8}$	82
Drawbar Height Above Ground (Adjustable), inches.....	12, 14 $\frac{1}{8}$, 17 $\frac{3}{4}$	13 $\frac{1}{8}$, 17 $\frac{1}{8}$, 22 $\frac{1}{2}$	13 $\frac{1}{8}$, 17 $\frac{1}{8}$, 22 $\frac{1}{2}$	15 $\frac{3}{8}$, 17 $\frac{1}{8}$, 20 $\frac{1}{8}$	15 $\frac{3}{8}$, 17 $\frac{1}{8}$, 20 $\frac{1}{8}$
Drawbar Lateral Adjustment, inches.....	18 $\frac{1}{4}$	18 $\frac{1}{4}$	18 $\frac{1}{4}$	18 $\frac{3}{8}$	18 $\frac{3}{8}$
***Belt Pulley, Diameter and Face, inches.....	9 $\frac{3}{4}$ by 7 $\frac{1}{2}$ †	11 by 7 $\frac{1}{2}$ †	11 by 7 $\frac{1}{2}$ †	14 by 8 $\frac{1}{2}$ †	14 by 8 $\frac{1}{2}$ †
Belt Pulley Shaft Speed, R.P.M.....	1019	899	899	707	707
Belt Speed, feet per minute.....	2601	2588	2588	2593	2593
***Power Take-Off Shaft, R.P.M.....	540	537	537	538	538
Turning Radius without Braking, feet.....	11	12 $\frac{3}{4}$	12 $\frac{3}{4}$	15	15
Capacity, Cooling System, gallons.....	4 $\frac{1}{4}$	6 $\frac{1}{4}$	6 $\frac{3}{4}$	10	11
Capacity, Fuel Tank, gallons.....	17 $\frac{1}{2}$	21	20 $\frac{1}{2}$	36	35
Capacity, Auxiliary Tank (with distillate or Diesel engines), gallons.....	$\frac{7}{8}$	$\frac{7}{8}$	$\frac{7}{8}$	$\frac{7}{8}$	$\frac{7}{8}$
Engine Lubricating Oil, quarts.....	6	8	9	11	11
Approximate Shipping Weight, Standard Tractor, pounds.....	3400	4440	4785	5865	6115
††Approximate Shipping Weight of Tractor with Special Equipment, pounds.....	3740	4830	5250	6340	6670
For approximate shipping weight with cooling system and fuel tank(s) full, add, pounds.....	140	180	205	305	340

*Maximum observed horsepower corrected to sea level barometric pressure (29.92 inches of mercury) and 60° F., according to A.S.A.E. and S.A.E. test codes. Distillate engine horsepower when using distillate fuel. **Other pneumatic tire sizes available for W-4, W-6, and WD-6 tractors. Steel wheels available for all models. ***Special equipment. †Larger size pulley available. ††Special equipment includes electric starting and lighting, belt pulley, power take-off, swinging drawbar, exhaust muffler, and, on W-9 and WD-9 tractors, gear shifter extension attachment.



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Standard Farm Tractors

(Continued)

Special Equipment



Illust. 1—An electric generator, driven from an extra sheave (regularly supplied) on the fan shaft, is a part of the electric starting and lighting system supplied on special order. Installation shown in the illustration is on a W-4 tractor.



Illust. 2—A radiator shutter is available as special equipment for use on all gasoline and Diesel Standard tractors. The shutter is included when a distillate-gasoline engine is ordered in place of gasoline.



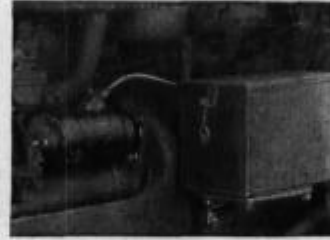
Illust. 3—Two head lamps and one tail lamp are a part of the electric lighting (and starting) system supplied for all models on special order. Strong, steady electric light permits overtime operation at night in a late season and makes it safe to move the tractor and equipment over the highway at night.



Illust. 7—This gear shifter extension attachment can be supplied on special order for factory or field application on Model W-9 and WD-9 Standard tractors. This attachment facilitates gear shifting on these large models.



Illust. 4—A swinging drawbar is available for all models on special order. The swinging drawbar facilitates turning with a load, or where short turns are desired, as in disk-ing. The drawbar shown is for W-4, W-6, and WD-6 models only. The drawbar for W-9 and WD-9 is slightly different.



Illust. 5—Showing starting motor and battery (6-volt) which are a part of the electric starting and lighting system available for all models. (Diesel models have two 6-volt batteries.) Installation shown is on Model W-9 tractor.



Illust. 6—Fiber belt pulleys in various sizes can be supplied on special order for all Standard tractor models. These durable, well-made pulleys, proved by many years of user acceptance, assure a satisfactory drive with a minimum of slippage.

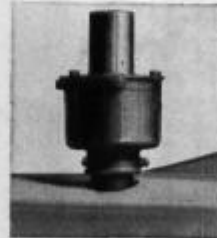


Illust. 8—An A.S.A.E. standard power take-off, complete with protective shield, is available for use with binders, small combines, sprayers, and other machines designed for power take-off operation behind the tractor.

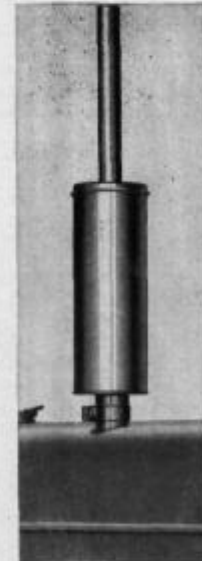


Illust. 9—Wheel weights, single and double, are available on special order for both front and rear wheels of all Standard tractors (W-4 weights shown).

Illust. 10—A spark arrester, which attaches readily to the exhaust pipe, can be supplied for all Standard tractors. It smothers and extinguishes sparks thrown off in the exhaust.



Illust. 11—This collector type pre-cleaner is used in place of the regular air cleaner intake cap on tractors which are operated in extremely dusty conditions. It lightens the load on the air cleaner. Cleaned in a jiffy.



Illust. 12—This exhaust muffler, with integral extension pipe, is the type supplied for W-4, W-6, and WD-6 tractors. The muffler for the W-9 and WD-9 tractors is similar but the pipe must be added as an extra.





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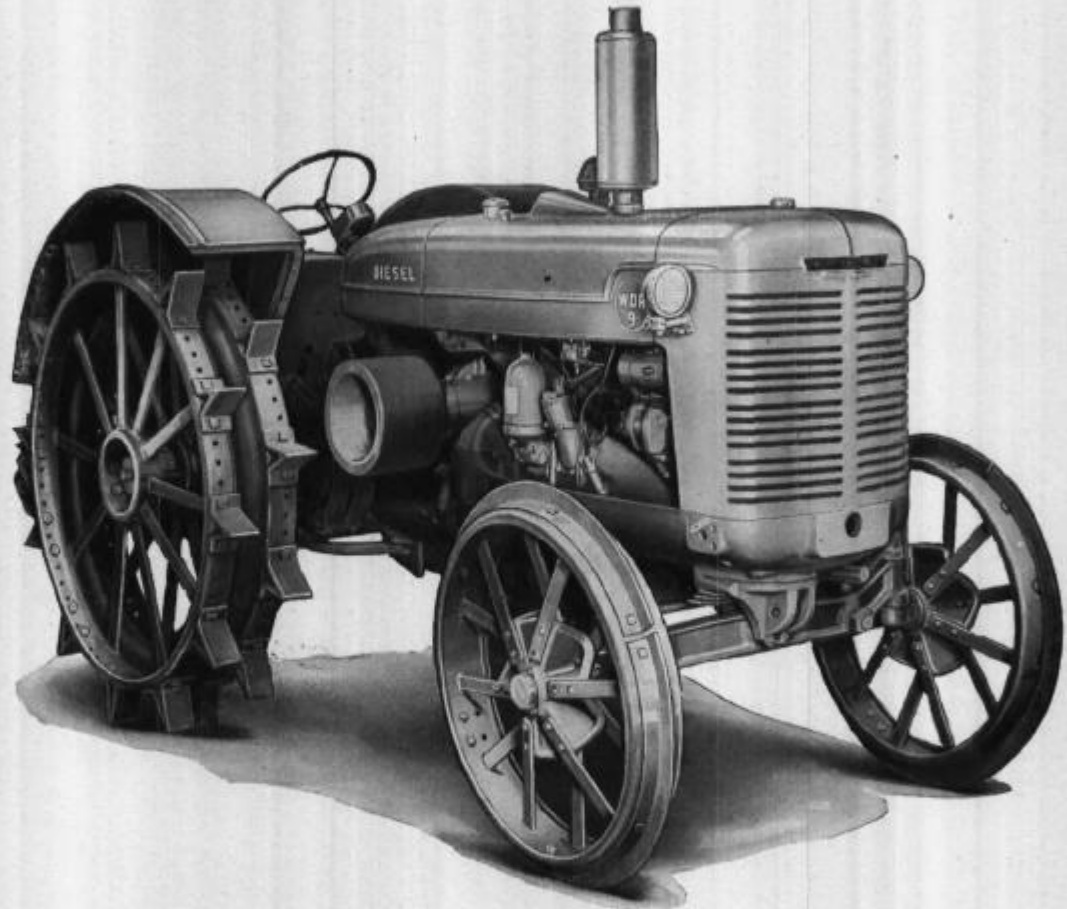
Rice Field Special Tractors

As the name implies, the two Rice Field Special tractors — the distillate-gasoline WR-9 and the Diesel WDR-9 — were designed for the especial use of rice growers. These tractors have the features (see following page) which rice growers said they needed in a tractor in order to carry on their work efficiently. Rice field tractors must have adequate power, weight, traction, "flotation," and steerability to pull plows, harrows,

drills, and binders satisfactorily in soft, muddy ground and over the levees or borders which cross the fields. They must also be able to deliver steady belt power for threshing.

These two tractors are supplied on steel wheels and spade lugs or on pneumatic tires specially developed for rice field conditions. When supplied on steel wheels the high fifth speed in the transmission is locked out.

Illust. 1 — Diesel Model WDR-9 Rice Field Special tractor, equipped with steel wheels and spade lugs. The WR-9 is the same tractor with a distillate engine or a high-compression straight gasoline engine in place of the Diesel. The belt pulley, muffler, and electric lights shown are special equipment.



WR-9 Distillate-Gasoline Tractor

The WR-9 is rated as a four-plow tractor capable of plowing 15 to 20 acres a day under most conditions and of meeting other comparable drawbar and belt requirements. It is supplied optionally with either a "combination" distillate-gasoline engine or a high-compression straight gasoline engine for use with 70-octane (or better) fuel exclusively, thus assuring the owner of maximum power and efficiency from the fuel of his choice. Its five-speed transmission is fully operative when the tractor is rubber-tired but the high fifth speed is locked out when the tractor is shipped on steel wheels. Engine details are covered under General Tractor Features farther on.

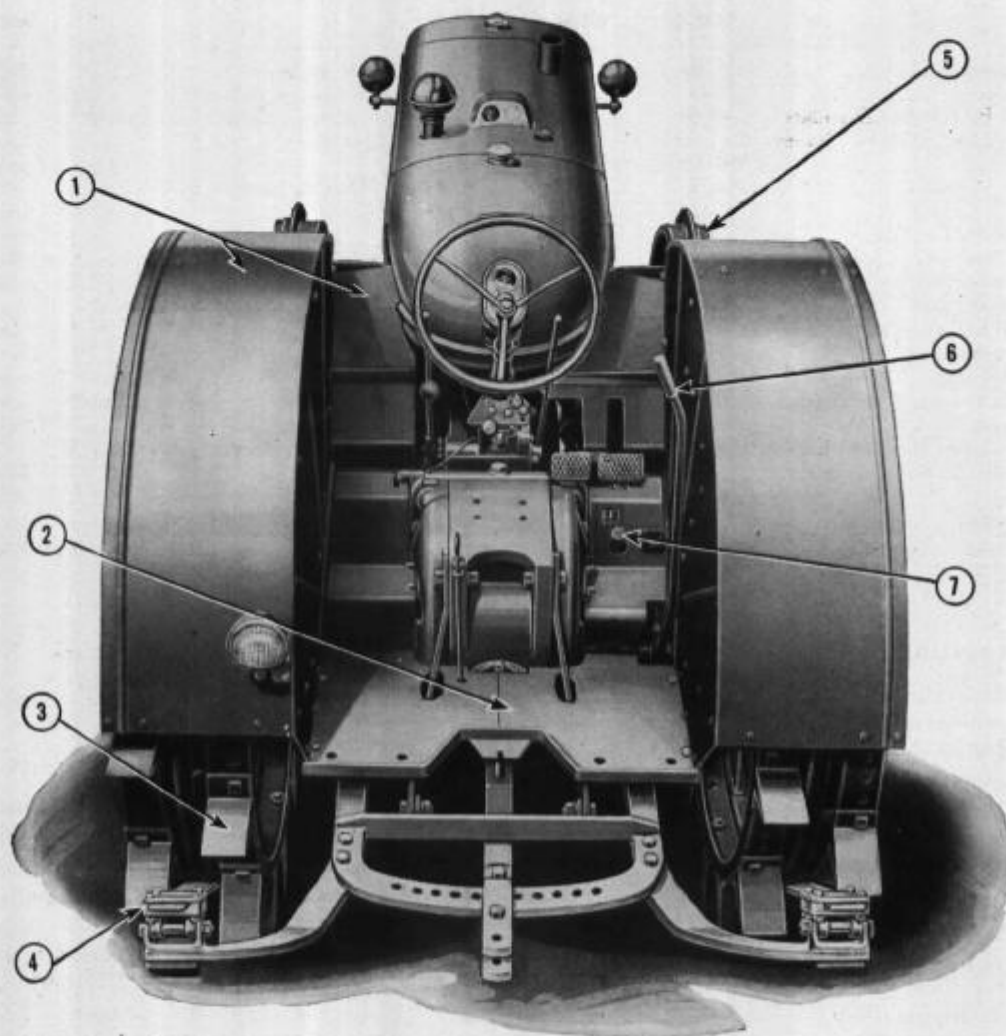
WDR-9 Diesel Tractor

The Model WDR-9 is virtually the same tractor as the WR-9 except for the engine — which in the WDR-9 is International Harvester's popular four-cylinder Diesel with the built-in all-weather system of starting. The WDR-9 can be started as readily as the WR-9. The WDR-9 is recommended for any rice grower who has year-round use for his tractor and can thus capitalize on full-Diesel economy. Details of the Diesel engine and the simplified starting system will be found under General Tractor Features farther on. Distinctive rice field tractor features of both the WR-9 and WDR-9 are illustrated and explained in detail on the following page.



Rice Field Special Tractors

Outstanding Features



Illust. 1 — Rear view of WDR-9 tractor with the seat removed.

1. WIDE, FULL-SIZE FENDERS protect the driver from dust when fields are dry and from mud and water when fields are wet. Shield between fenders and fuel tank shuts out splashes caused when front wheels drop into water-filled holes.

2. HIGH, ROOMY PLATFORM enables operator to steer and operate tractor comfortably while standing up, either astride of seat support or to one side (seat can be flipped back out of the way). Also facilitates adjustment of drawbar.

3. LARGE REAR WHEELS raise tractor, providing ample clearance for crossing high borders; give better "flotation" in soggy ground; give better traction under all conditions.

4. REAR WHEEL SCRAPERS of correct design and strong construction are available for use where ground conditions warrant. They are easily ad-

justed to the correct angle. (Special equipment.)

5. LARGE FRONT WHEELS roll easily over rough ground, borders, etc.; give better "flotation" in soft ground; give easier steering in rough ground.

6. HAND-OPERATED OVER-CENTER CLUTCH enables operator to engage and disengage the clutch readily from the seat or from the stand-up driving position which is characteristic of rice field tractor operation. Long lever is easily reached from either position without stooping or distraction of driver attention.

7. A FOOT-OPERATED DECELERATOR makes it easy for the operator to slow the tractor engine down momentarily while passing over rough surfaces, borders, etc. Does not disturb throttle or governor setting. Engine automatically resumes governed speed when decelerator is released.



Rice Field Special Tractors

Specifications

	WR-9	WDR-9		WR-9	WDR-9
Rated Engine Speed, R.P.M.....	1500	1500	Total Width, inches.....	69 $\frac{1}{4}$	69 $\frac{1}{4}$
Number of Cylinders.....	4	4	Height at Radiator, inches.....	63 $\frac{1}{2}$	63 $\frac{1}{2}$
***Maximum Belt H.P. (WR-9 on Distillate)	49.00	49.00	Turning Radius (without braking) feet.	15	15
Governed Full Load Engine Speed			Cooling System.....	Pump, Thermo.	Pump, Thermo.
Range, R.P.M.....	900-1500	800-1500	Capacity, Cooling System, gallons.....	10	11
Forward Speeds, M.P.H.....	2 $\frac{3}{8}$, 3 $\frac{1}{2}$, 4 $\frac{1}{8}$, 6	2 $\frac{3}{8}$, 3 $\frac{1}{2}$, 4 $\frac{1}{8}$, 6	Fuel.....	**Distillate-Gasoline	Diesel
Reverse Speed, M.P.H.....	3 $\frac{1}{2}$	3 $\frac{1}{2}$	Fuel Tank Capacity, gallons.....	36	36
Bore and Stroke, inches.....	4.4 x 5.5	4.4 x 5.5	Capacity, Auxiliary Tank, gallons.....	$\frac{3}{8}$	$\frac{3}{8}$
Replaceable Cylinder Sleeves.....	Yes	Yes	Engine Lubrication.....	Pressure	Pressure
*Belt Pulley, Diameter and Face, inches.	14 x 8 $\frac{1}{2}$	14 x 8 $\frac{1}{2}$	Clutch.....	12" Single Plate, Over-center	12" Single Plate, Over-center
Belt Pulley R.P.M. at Rated Engine Speed	707	707	Drawbar Adjustment, inches above ground.....	12 $\frac{1}{2}$ -18	12 $\frac{1}{2}$ -18
Belt Speed, feet per minute.....	2593	2593	Drawbar Lateral Hitch Adjustment, inches.....	18 $\frac{3}{8}$	18 $\frac{3}{8}$
*Power Take-Off, R.P.M.....	538	538	Shipping Weight, approx., lbs.....	6075	6310
Front Wheels, Diameter and Rim, inches	34 x 6	34 x 6			
Front Wheel Tread, C. to C., inches...	51 $\frac{1}{2}$	51 $\frac{1}{2}$			
Drive Wheels, Diameter and Rim, inches	54 x 12	54 x 12			
Drive Wheel Tread, C. to C., inches...	57 $\frac{3}{4}$	57 $\frac{3}{4}$			
Wheelbase, inches.....	83 $\frac{3}{8}$	83 $\frac{3}{8}$			
Total Length, inches.....	138 $\frac{3}{8}$	138 $\frac{3}{8}$			

*Special Equipment. **High-compression engine for operation on 70-octane gasoline optional. ***Maximum observed figures corrected to 60° F. at sea level, barometer pressure 29.92 inches mercury, according to standard rating code. Specifications subject to change without notice.

Regular Equipment

The WR-9 Rice Field Special tractor is regularly supplied with combination distillate-gasoline engine (but may also be had with high-compression engine for use with gasoline exclusively) and the WDR-9 with 4-cylinder full-Diesel engine. Other regular equipment for these tractors includes: International high-tension tractor magneto with automatic impulse coupling. Variable speed governor controlled from the seat. Oil type air cleaner. Oil filter with replaceable element. Floating screen oil pump intake. Fuel strainer. Radiator shutter, heat indicator, and manifold heat control (distillate-gasoline engine only). Replaceable cylinder sleeves. Enclosed external contracting foot brakes operating on differential shafts. Hand-operated over-center clutch. Decelerator. Front drawbar. Steel

wheels with spade lugs 6 x 4 inches. Adjustable drawbar. Waterproof upholstered seat.

Special Equipment

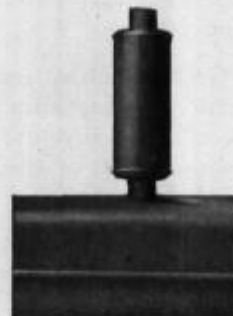
The following items of special equipment are available for WR-9 and WDR-9 tractor owners who have use for them: Radiator shutter and heat indicator (for tractors not regularly so equipped). Belt pulleys up to 19 $\frac{1}{2}$ inches in diameter, belt speeds up to 3612 f.p.m. Power take-off. Automotive type electric lighting and starting (6-volt for WR-9, 12-volt for WDR-9). Swinging drawbar. Collector type precleaner. Exhaust muffler. Spark arrester. Extension tires for front and rear wheels. Rear wheel mud scrapers. Pneumatic tires. Remote control gear shift attachment.



Illust. 1—Belt pulleys in various sizes can be supplied for the Model WR-9 and WDR-9 tractors.



Illust. 2—Standard automotive type electric lighting and starting equipment is available. Lighting equipment includes two lights at front and one at rear.



Illust. 3—Exhaust muffler, with muffler extension pipe if desired, is available on special order.



Illust. 4—Rear wheel mud scrapers, as shown, can be supplied on special order. They are easily adjustable.



Orchard and Grove Tractors

Fruit growers' operating conditions and equipment requirements are so different from those of other agriculturists that International Harvester has designed five tractor models especially for use in orchards, groves, and vineyards.

The five tractors are the streamlined O-4 and O-6 for use in citrus groves and orchards where branches are low and trees are closely spaced, and the plain-fender OS-4, OS-6, and ODS-6 for use in orchards where trees are pruned fairly high and are not so close to each other. The plain-fender models are well adapted also to work in vineyards.

The "4" series tractors represent one size (2-plow) and the "6" series a larger size (3-plow). Tractors of the two series are similar in all essential respects except that of size.

All Orchard and Grove models except the ODS-6 are regularly equipped with a gasoline engine but can be supplied with a distillate-gasoline engine when the purchaser wishes to use the lower-grade fuel. The ODS-6 is supplied only with a Diesel engine. This Diesel-powered model was requested by fruit growers whose operations were varied and extensive enough to keep the tractor busy most of the year and thus make substantial fuel-cost savings. All engines in these tractors, including the ODS-6 Diesel, have replaceable cylinders, valves in head, pressure lubrication, and precision type, prefitted, quick-replaceable main and connecting rod bearings.

"O" and "OS" models are similar in all essential respects except that of fender equipment. The difference

in fender equipment is one more illustration of the degree of specialization necessary to adapt tractors to different tree types and spacings. If a tractor is to operate in an orchard or grove where tree branches and fruit do not hang low enough to touch a tractor passing underneath, there is no object in having the streamlined "O" type fender equipment; the plain fender "OS" type is ample. Fruit growers choose "O" or "OS" models to suit their conditions.

All of these tractors have five-speed transmissions with a low first speed for slow travel when spraying and a high fifth speed for rapid travel when moving from job to job, hauling loaded trailers on the highway, etc.

When equipped with belt pulley and power take-off, any of these tractors provides steady, governor-controlled power for the operation of hammer mills, fertilizer mixers, sprayers, dusters, and other belt and shaft driven machines.

Other important features of the Orchard and Grove tractors are low overall height; low, roomy platform and comfortable seat, adjustable for stand-up driving; and hand-operated over-center clutch, permitting clutching and declutching from either the sitting or standing position. With the over-center clutch, an operator can start and stop without holding a clutch pedal down or putting the gearshift in neutral—a great convenience when spraying with an engine-driven sprayer.

Engine, transmission, and other features are described under General Tractor Features farther along in the tractor section.

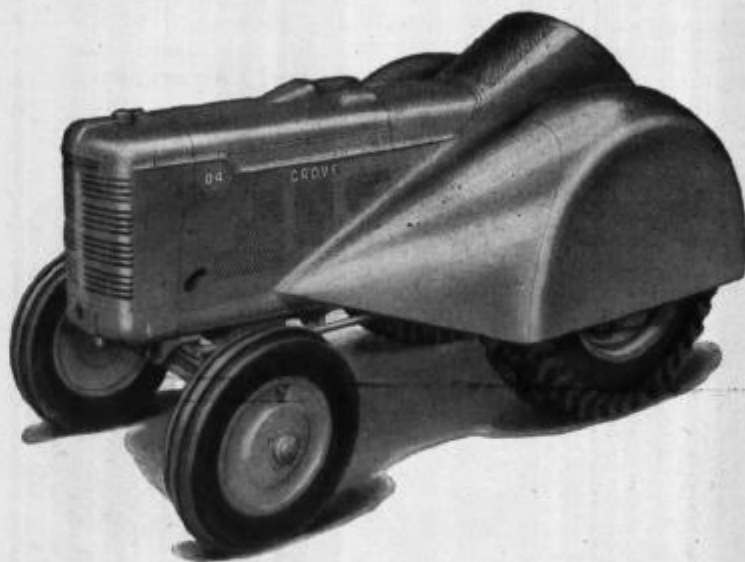
Model O-4

The most striking feature of the O-4 tractor pictured at right and of the O-6 tractor pictured on the next page is their sleek streamlined exterior, which in these views includes the rounded cowl over the steering wheel (special equipment).

These two Orchard and Grove models have no projections or crevices to catch branches and tear fruit off as the tractors pass close to the trees. For that reason they are popular among citrus growers and others whose trees have low branches which must be protected from damage during plowing, disking, and furrowing operations.

Although completely shielded, these tractors are readily accessible for inspection and adjustment, because the protecting sheet metal parts can be removed easily and quickly. The entire hood side, for example, including the part extending back to the fender, can be raised and held in the open position (see illustration farther on).

The O-4 has the same basic engine as the well-known Farmall H tractor and is therefore to be classed as a 2-plow tractor. In an open field the O-4 would plow at the rate of 7 to 12 acres a day, double-disk 25 to 30 acres,



Illust. 1—Model O-4 tractor, equipped with rear wheel weights and steering wheel cowl.

and harrow (spring tooth) 20 to 25 acres. Fuel consumption—gasoline (or distillate if the tractor is ordered with a distillate engine)—is 15 to 20 gallons a day.



Orchard and Grove Tractors

(Continued)

Model O-6

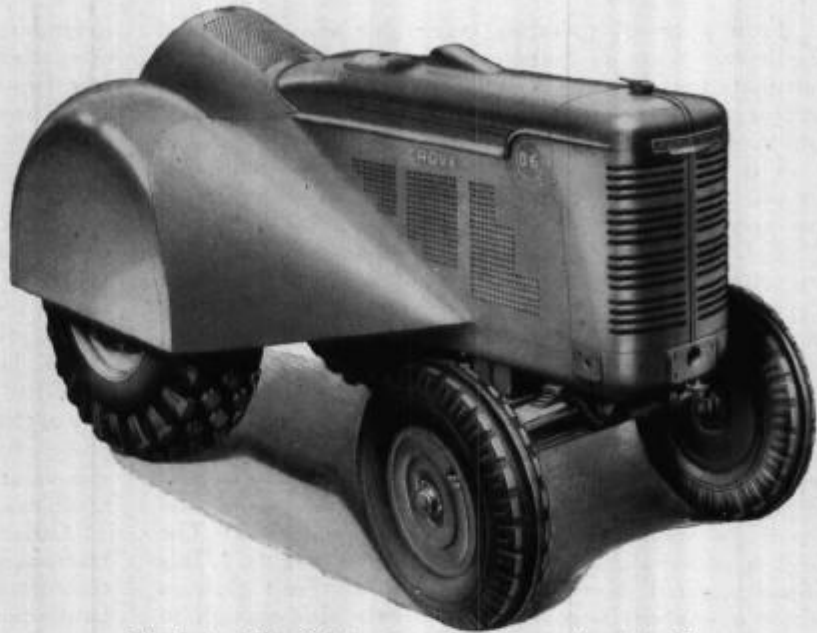
The O-6, larger of the two streamlined Orchard and Grove tractors, resembles the O-4 in every respect except that of size. The O-6 has the same basic engine as the famous Farmall M tractor and would therefore be classed as a 3-plow tractor.

The O-6, like the O-4, is regularly supplied with a gasoline engine (distillate engine can be substituted on special order) and a 5-speed transmission having an extra-low first speed which, in conjunction with the hand-operated over-center clutch, greatly facilitates the spraying operation.

Another feature common to both tractors is the differential steering brakes, which enable the operator to make short turns in restricted quarters and in loose or sandy soil where the front wheels, when angled, have a tendency to slide sideways. These brakes can be used together for braking the tractor on inclines and can be locked in the "on" position to hold the tractor stationary while parked.

In these tractors, too, engine speed can be held at any desired level by means of the variable speed governor controlled from the seat. The manually controlled governor and five-speed transmission give the operator any desired combination of drawbar pull and tractor traveling speed.

The work capacity of the O-6 can be expressed as follows (working in an open field): plowing, 9 to 13 acres a day; tandem-disking, 30 to 40 acres; harrowing (spring tooth), up to 30 acres. Fuel consumption, 20 to 25 gallons per day.



Illust. 1 — The O-6 tractor, specially equipped with steering wheel cowl and rear wheel weights.

Model OS-4

The OS-4 tractor pictured at left and the OS-6 shown on the next page are the same tractors as the O-4 and O-6 except that the streamlined fenders have been replaced with plain fenders.

A streamlined tractor exterior is not necessary in many apple, cherry, prune, pecan, and other orchards where trees are pruned high and are not so closely spaced as in citrus groves. The "OS" tractors are intended for use in such orchards as those and in the larger vineyards, where tractor power can often be used to advantage.

The OS-4 and OS-6 tractors were brought out in response to a widespread demand for tractors having all the special features of the O-4 and O-6 tractors except the streamlining. The OS-4 and OS-6 have the features orchardists look for — low overall height, low platform, seat, steering wheel, and controls, including a hand-operated over-center clutch which can be handled conveniently from the standing or sitting position. The transmission, with appropriate adjustment of engine r.p.m. through the manually controlled governor, provides traveling speeds down to a "snail's pace" for spraying and up to approximately fifteen miles per hour for fast movement or haulage on the highway.

Work capacity and fuel consumption per day are the same for the OS-4 as for the O-4 (see previous page). Numerous features of the tractor not mentioned here are described and illustrated on the "Outstanding Features" pages immediately following and in the "General Tractor Features" part of the tractor section of this catalog.



Illust. 2 — The OS-4 tractor, equipped with electric starting and lighting.



Orchard and Grove Tractors

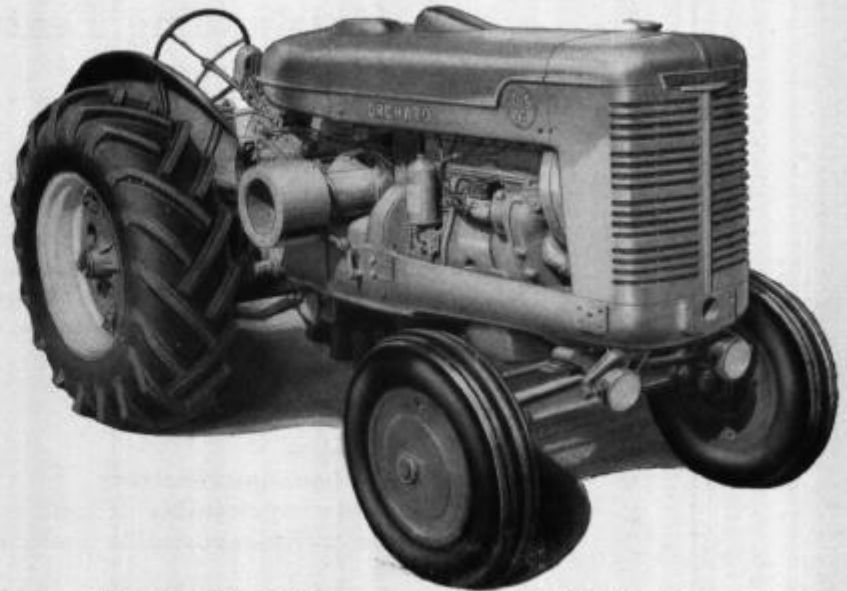
(Continued)

Model OS-6

The Model OS-6 is the plain-fender counterpart of the streamlined O-6 and is the model an orchardist would select whose operations required a tractor in the 3-plow class. This tractor develops more than 33 maximum drawbar horsepower (corrected) and is capable of plowing, in an open field, 9 to 13 acres a day, tandem-disking 30 to 40 acres, and harrowing (spring tooth) up to 30 acres. Fuel consumption runs from 20 to 25 gallons a day.

The OS-6, in common with the other four Orchard and Grove models, is easy to operate and comfortable to ride. Its spring-cushioned, waterproof upholstered seat is large and well proportioned. It is adjustable forward and back and is so designed that when the operator wants to drive standing up he can flip the seat back out of the way of his legs. The seat automatically locks itself in the normal position. The platform provides ample room for the operator, either sitting or standing, and is low enough to permit driving beneath fairly low branches, even with the operator standing.

The OS-6, like the other models, can be supplied with various items of special equipment, including belt pulley (see illustration), A.S.A.E. standard power take-off, and a high fourth speed of 7 miles per hour in place of the regular. This high fourth speed is desirable often for hauling or for high-speed cultivating operations. Regular equipment on all five models includes pneumatic tires and a swinging drawbar. The latter is valuable in orchard work, where the tractor must often make short turns under load. With the swinging drawbar, there is much less side leverage on the tractor rear end and therefore less tendency for the front wheels to slide sideways on turns or to wander on the straightaway.



Illust. 1 — The OS-6 tractor, equipped with belt pulley and electric starting and lighting.

Model ODS-6

The Model ODS-6 Orchard and Grove tractor is the same tractor as the OS-6 except for the engine, which in the ODS-6 is a four-cylinder International Harvester Diesel developing approximately the same horsepower as that of the OS-6 and the O-6.

The Model ODS-6 brings to the orchardist whose operations are continuous and extensive the well-known fuel economy of a full-Diesel compression-ignition engine using low-priced Diesel fuel. The Diesel not only uses cheaper fuel, but uses less fuel than carburetor type engines of equal horsepower. Moreover, owing to its higher efficiency, the Diesel delivers more horsepower hours per gallon of fuel consumed. Such economy represents an attractive annual saving in fuel cost to fruit growers whose tractors are on the go most of the year.

Operation of the Diesel ODS-6 tractor is virtually the same as operation of the gasoline OS-6. The Diesel engine speed is controlled throughout the working range of 650 r.p.m. by means of a quick-acting sensitive governor built into the injection pump and adjustable by the operator from the tractor seat.

Nor is starting a problem. The ODS-6 Diesel engine has Harvester's own built-in all-weather quick-start system. It can be started with conventional automotive type electric starting equipment or can be hand-cranked if necessary.



Illust. 2 — The Diesel ODS-6 tractor, equipped with electric starting and lighting and belt pulley.



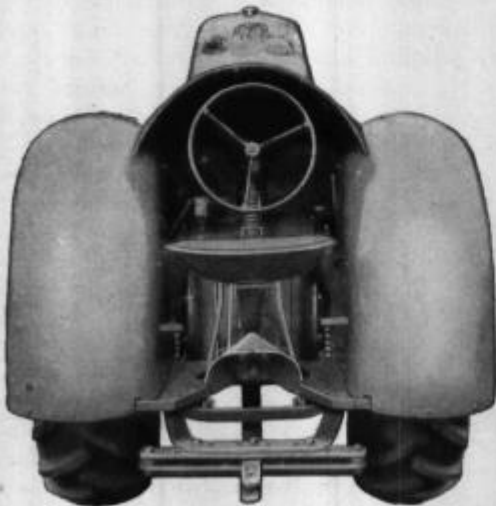
Orchard and Grove Tractors

(Continued)

Outstanding Features

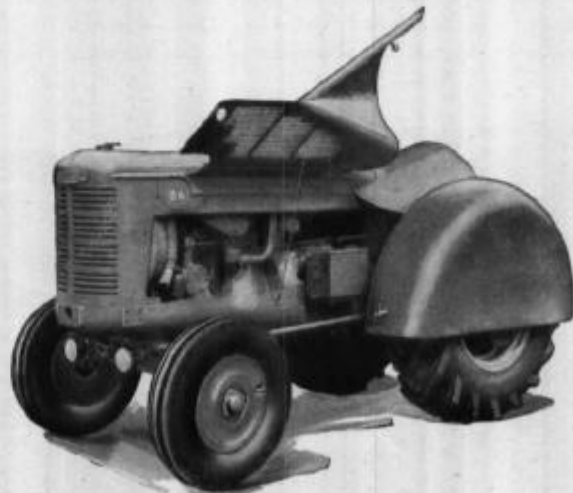
- Five models and two sizes . . . two-plow, three-plow
* Three types of engine . . . gasoline, distillate, Diesel
Five-speed transmissions . . . five forward speeds
* Manually controlled variable speed governor
Convenient controls, including hand-operated over-center clutch and differential type steering brakes
Low, roomy platform and comfortable seat, adjustable for leg room and for stand-up driving
* Valve-in-head engine design
* Replaceable cylinder sleeves
* Pressure lubrication
* Quick, all-weather Diesel starting
* Efficient combustion chamber design
* Precision type quick-replaceable main and connecting rod bearings
* Crankshaft bearing surfaces induction-hardened
* Efficient cooling system . . . water pump, thermostat, full-length cylinder water jackets
* Lubricating oil filter with replaceable element
* Magneto with automatic impulse coupling and long-life magnet
* Oil bath type air cleaner
* International single-plunger Diesel injection pump
* Spring-loaded rawhide dust seals
* Anti-friction ball and roller bearings
* For detailed explanation see General Tractor Features.

For Operation Under Trees



Illust. 1 — Note in this rear view of an O-6 tractor the low steering wheel, seat, and platform which permit the operator to drive beneath low-hanging limbs without difficulty. The swinging drawbar facilitates turning under load.

Streamlined, but Accessible



Illust. 2 — "O" tractors are accessible. The entire hood side can be raised and held as shown or, if not wanted, you can pull the hinge pin and remove it completely. Steering wheel cowl and engine cover likewise can be removed in a moment.

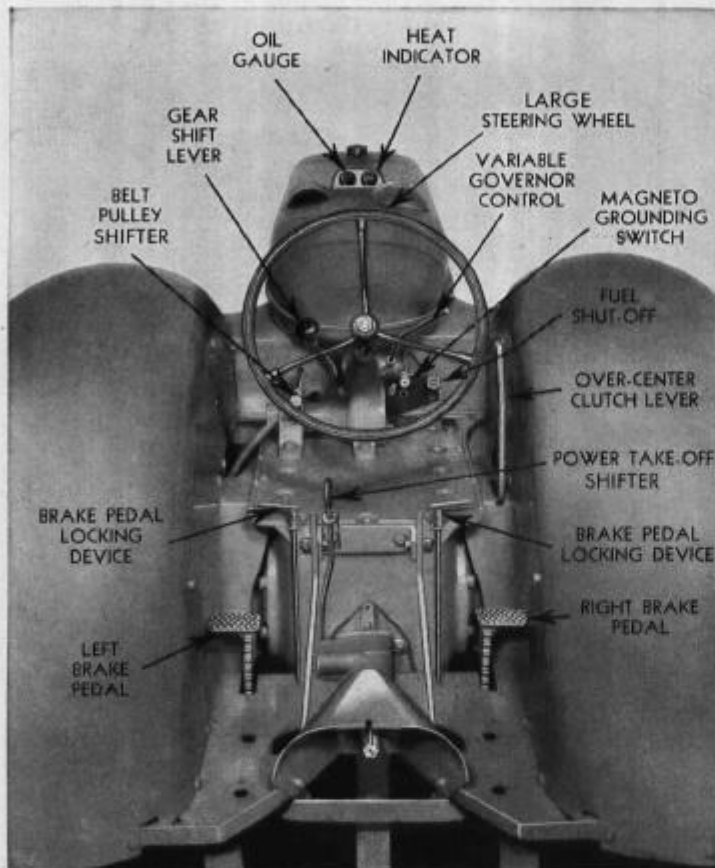


Orchard and Grove Tractors

(Continued)

Outstanding Features (Continued)

Easy-to-Reach Controls



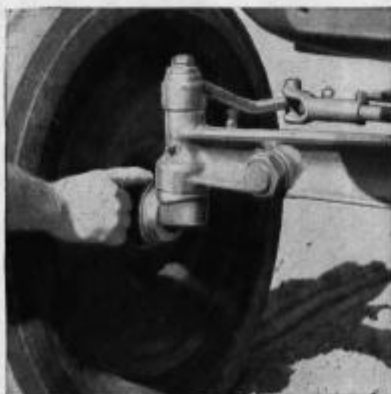
Illust. 1 — Showing location of the various controls on Orchard and Grove tractors, all arranged for convenient handling from the seat (which was removed for this illustration). Note the low platform, steering brakes, and hand-operated over-center engine clutch.

Effective Steering Brakes



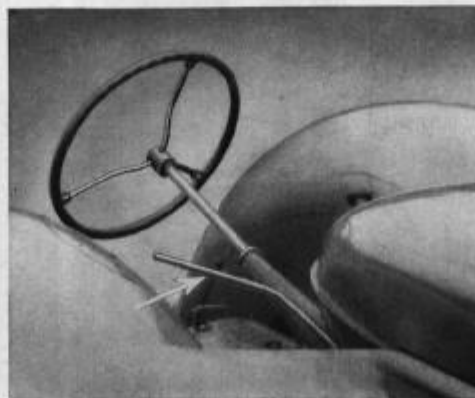
Illust. 2 — Here the operator is making a sharp right turn, using the differential type steering brake (note foot on right hand brake pedal). Use of these steering brakes prevents the front wheels from sliding sideways in mud or yielding soil. The brakes can be set and locked when the tractor is standing.

Easy Steering



Illust. 3 — Ball bearings in the forged steel steering knuckles and on the steering shaft make it easy to turn the front wheels.

Governor Control



Illust. 4 — By means of the variable speed governor control lever (arrow) the operator can instantly obtain any desired engine speed in the working range.

Brake Lock



Illust. 5 — With this handy locking device (one for each brake), the brake can be set to hold the tractor stationary.

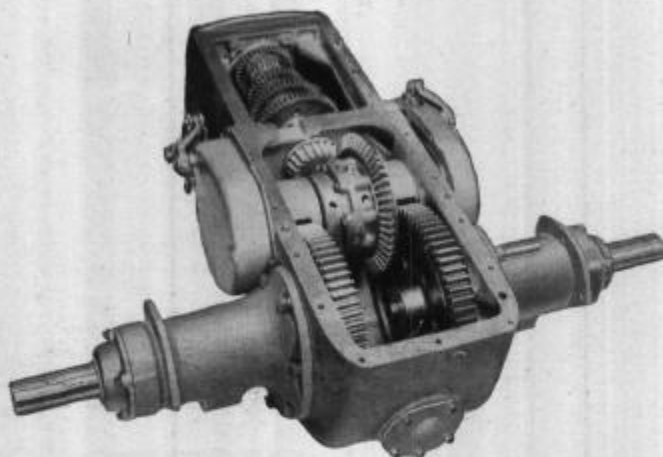


Orchard and Grove Tractors

(Continued)

Outstanding Features (Continued)

Five-Speed Transmission



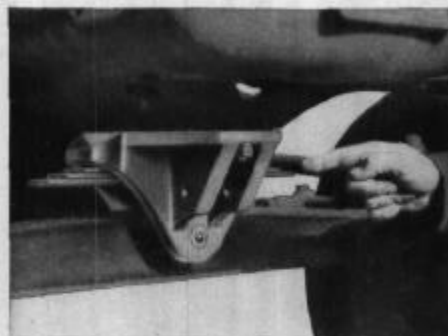
Illust. 1 — Gears and pinions in the five-speed Orchard and Grove tractor transmission and final drive are drop-forged of alloy steel, precision-machined, carburized, and heat-treated to leave them extremely hard on the contact surfaces and relatively soft in the center to absorb sudden stresses.

Sit - or - Stand Driving



Illust. 2 — Even though a tractor seat is comfortable and adjustable, the operator occasionally wants to "stretch his legs" or, for better observation of the work, to drive the tractor standing up. That is easy on these tractors. The seat tilts back out of the way of the operator's legs and, when put back in the normal position, automatically locks itself.

Useful Front Drawbar



Illust. 3 — Tractor operators occasionally find it quicker and easier to pull from the front instead of the rear. The handy front drawbar provides this appreciable convenience. It saves time.

Comfortable Seat



Illust. 4 — In this close-up of the water-proof upholstered seat and seat support, note the generous proportions of the seat and the coil spring cushioner. Seat is adjustable for leg room forward and back.

Power Take-Off Shifter



Illust. 5 — The power take-off on these tractors is engaged and disengaged in the same manner as gears are shifted. Note operator's hand on the P.T.O. shifter. He pulls up to engage; down to disengage.



Orchard and Grove Tractors

(Continued)

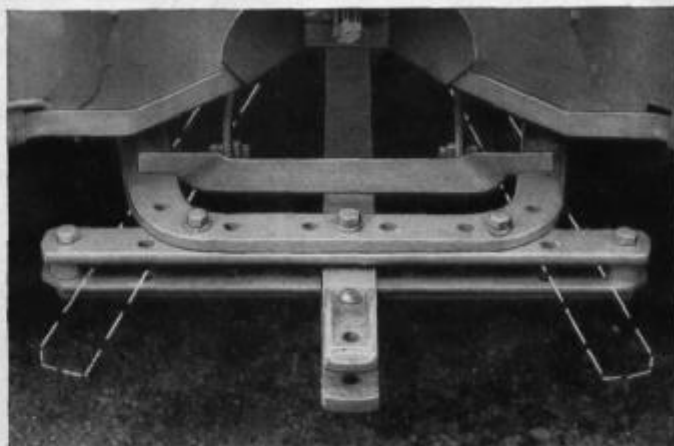
Outstanding Features (Continued)

Short Turning Radius



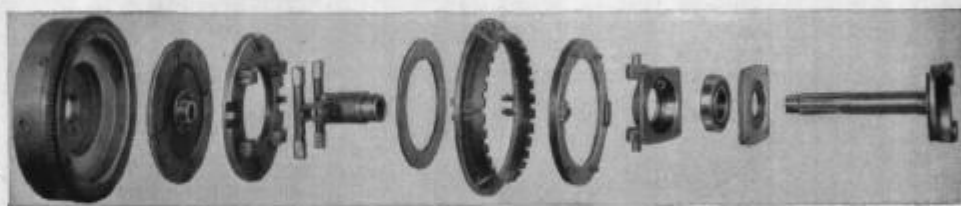
Illust. 1 — Short turning, so essential to satisfactory orchard and grove tractor operation, is assured in these tractors by the full-width front axle, efficient worm and gear steering mechanism, and differential type steering brakes. The wide front axle permits the use of large front wheels without sacrifice of short-turning ability. The large wheels greatly facilitate turning, also steering in the straightaway.

Swinging Drawbar Regular



Illust. 2 — Because of the importance of short turning in orchard and grove work, all of these tractors are regularly supplied with a swinging drawbar. The swinging drawbar, pivoting well forward of the rear axle and free to swing the full width of the supporting cross member, greatly reduces side-pull on the rear end of the tractor when pulling its load around a corner.

Hand-Operated Over-Center Clutch



Illust. 3 (above) and 4 (at right) — Compact unit construction makes this hand-operated over-center clutch easily accessible for inspection or adjustment and quickly removable for service work if necessary without disturbing engine or transmission. It engages smoothly and positively. When correctly adjusted, slippage and uneven wear are unheard of. The clutch throw-out mechanism is conveniently lubricated from outside the tractor.



Easy - to - Start Diesel



Illust. 5 (at left) — Here the operator of an ODS-6 Diesel tractor has just finished warming up the engine on the low-compression gasoline starting cycle and is changing it over to the high-compression Diesel cycle. His right hand is on the variable speed governor control and his left hand is on the Diesel changeover or "conversion" lever. This IH Diesel starts without fuss or bother in any kind of weather.



INTERNATIONAL HARVESTER



Orchard and Grove Tractors

(Continued)

REGULAR EQUIPMENT — O-4, OS-4, O-6, and OS-6 tractors are regularly supplied with a gasoline engine (but are available with distillate engine on special order). The Model ODS-6 is Diesel-powered. Other regular "O" tractor equipment includes: Heat indicator. High-tension tractor magneto with automatic impulse coupling and long-life magneto (for starting purposes only on Diesel). Variable speed governor controlled from the seat. Oil bath type air

cleaner. Lubricating-oil filter with replaceable element. Floating screen intake on oil pump. Fuel strainer. Replaceable cylinder sleeves. Enclosed external contracting foot brakes operating on differential shafts. Hand-operated, single-plate, over-center clutch. Front drawbar. Low swinging drawbar, adjustable up and down. Tilt-back waterproof upholstered seat, adjustable forward and back. Pneumatic tires.

Specifications

	O-4	OS-4	O-6	OS-6	ODS-6
*Maximum Belt H.P. with Gasoline Engine.....	27.5	27.5	38.5	38.5	.....
*Maximum Belt H.P. with Distillate Engine.....	24	24	36	36	.....
*Maximum Belt H.P. with Diesel Engine.....	.....	.....	.....	.....	36
*Maximum Drawbar H.P. with Gasoline Engine.....	25	25	33.5	33.5	.....
*Maximum Drawbar H.P. with Distillate Engine.....	22	22	32	32	.....
*Maximum Drawbar H.P. with Diesel Engine.....	.....	.....	.....	.....	31.5
Engine Fuel, regular equipment.....	Gasoline	Gasoline	Gasoline	Gasoline	Diesel
Rated Full Load Governed Engine Speed, R.P.M.....	1650	1650	1450	1450	1450
Variable Speed Governor Controlled from Seat, Full Load Engine Speed Range, R.P.M.....	1000-1650	1000-1650	950-1450	950-1450	800-1450
Number of Cylinders.....	4	4	4	4	4
Bore and Stroke, inches.....	3 3/8 by 4 1/4	3 3/8 by 4 1/4	3 7/8 by 5 1/4	3 7/8 by 5 1/4	3 7/8 by 5 1/4
Replaceable Cylinder Sleeves.....	yes	yes	yes	yes	yes
Piston Displacement, cubic inches.....	152.1	152.1	247.7	247.7	247.7
Engine Lubrication, Type.....	Pressure Pump	Pressure Pump	Pressure Pump	Pressure Pump	Pressure Pump
Cooling System, Type.....	Thermostat	Thermostat	Thermostat	Thermostat	Thermostat
Engine Clutch (single-plate, over-center, hand- operated) diameter, inches.....	10	10	11	11	11
Type of Steering (18 inch wheel).....	Worm Gear Enclosed	Worm Gear Enclosed	Worm Gear Enclosed	Worm Gear Enclosed	Worm Gear Enclosed
**Pneumatic Tire Size, Front Wheels.....	5.50-16	5.50-16	6.00-16	6.00-16	6.00-16
**Pneumatic Tire Size, Rear Wheels.....	12-26	12-26	13-26	13-26	13-26
Forward Speeds, miles per hour.....	1 1/2, 3 1/8, 4, 5, 14 5/8	1 1/2, 3 1/8, 4, 5, 14 5/8	1 1/2, 3 1/8, 4 1/8, 4 7/8, 14 5/8	1 1/2, 3 1/8, 4 1/8, 4 7/8, 14 5/8	1 1/2, 3 1/8, 4 1/8, 4 7/8, 14 5/8
Reverse Speed, miles per hour.....	1 1/4	1 1/4	1 1/8	1 1/8	1 1/8
Front Wheel Tread, C. to C., inches.....	45 1/8	45 1/8	46 3/4	46 3/4	46 3/4
Rear Wheel Tread, C. to C., inches.....	41 3/4	41 3/4	45	45	45
Wheelbase, inches.....	66 3/4	66 3/4	76 1/4	76 1/4	76 1/4
Length overall, inches.....	120 1/8	120 7/8	133 1/4	133 1/4	133 1/4
Width overall, inches.....	60 1/4	55 1/2	65	59 3/4	59 3/4
Height overall, inches.....	57 1/8	57 1/8	61 1/2	61 1/2	61 1/2
***Height overall with steering wheel cowl, inches.....	60 3/4	.....	63 1/2	.....	.....
Ground Clearance under Front Axle, inches.....	15 1/8	15 1/8	15 1/4	15 1/4	15 1/4
Ground Clearance under Swinging Drawbar in Upper Adjustment, inches.....	12 7/8	12 7/8	11 7/8	11 7/8	11 7/8
Swinging Drawbar Height above Ground (Adjustable), inches.....	10 3/4, 14 1/8, 17 1/2	10 3/4, 14 1/8, 17 1/2	9, 14 3/8, 19 5/8	9, 14 3/8, 19 5/8	9, 14 3/8, 19 5/8
Drawbar Lateral Swing at Pinhole, inches.....	28 3/4	28 3/4	27 1/8	27 1/8	27 1/8
***Belt Pulley, Diameter and Face, inches.....	9 3/4 by 7 1/2	9 3/4 by 7 1/2	11 by 7 1/2	11 by 7 1/2	11 by 7 1/2
Belt Pulley, R.P.M.....	1019	1019	899	899	899
Belt Speed, feet per minute.....	2601	2601	2588	2588	2588
***Power Take-Off Shaft, R.P.M.....	540	540	537	537	537
Turning Radius, without Braking, feet.....	11	11	12 3/4	12 3/4	12 3/4
Turning Radius, with Brake Applied, feet.....	10	10	11 1/4	11 1/4	11 1/4
Capacity, Cooling System, gallons.....	4 1/4	4 1/4	6 1/4	6 1/4	6 3/4
Capacity, Fuel Tank, gallons.....	17 1/2	17 1/2	21	21	20 1/2
Capacity, Auxiliary Tank (with Distillate or Diesel Engines), gallons.....	7/8	7/8	7/8	7/8	7/8
Engine Lubricating Oil, quarts.....	6	6	8	8	9
Transmission Case, gallons.....	6	6	13	13	13
Steering Gear Housing, pints.....	1 1/4	1 1/4	1 1/2	1 1/2	1 1/2
Air Cleaner Oil Cup, pints.....	1 5/8	1 5/8	2 1/4	2 1/4	2 3/4
Approximate Shipping Weight, Basic Tractor with above Pneumatic Tires, pounds.....	4050	3865	5130	4835	5180
††Approximate Shipping Weight of Tractor with Special Equipment.....	4320	4120	5435	5120	5540
For Approximate Shipping Weight with Cooling System and Fuel Tank(s) full add, pounds.....	140	140	180	180	205

*Maximum observed horsepower corrected to sea level barometric pressure (29.92 inches of mercury) and 60° F. according to A.S.A.E. and S.A.E. test codes. Distillate engine horsepower when using distillate fuel. **Other pneumatic tire sizes available. ***Special equipment. †A 13 by 8 1/2 inch pulley is available for OS-6 and ODS-6 tractors, providing a 3058 feet per minute belt speed. ††Special equipment includes above pneumatic tires, electric starting and lighting, belt pulley, power take-off, and, on O-4 and O-6 tractors, steering wheel cowl.



Orchard and Grove Tractors

(Continued)

Special Equipment

Distillate-gasoline engine, with radiator shutter, in place of the regular gasoline engine. Belt pulley, $9\frac{3}{4}$ inches diameter, $7\frac{1}{2}$ inches face, for O-4 and OS-4; and 11 inches diameter, $7\frac{1}{2}$ inches face, for O-6, OS-6, and ODS-6. A.S.A.E. standard power take-off. 6.00-16 and 6.50-16 and 13-26 tires for the O-4 and OS-4. 6.50-16 and 7.50-16 and 14-26 tires for the O-6, OS-6, and ODS-6. Standard automotive type electric starting and lighting

equipment, including two front lights, one rear (combination rear lamp and tail light can be ordered in place of rear lamp). Rear wheel weights. Radiator shutter. Steering wheel cowl for O-4 and O-6 tractors. 7 m.p.h. fourth speed in place of regular. Engine-operated tire pump. (Note: Special pistons for high-altitude operation, 5,000 and 8,000 feet, are supplied as optional equipment for the O-4, OS-4, O-6, and OS-6 tractors.)



Illust. 1 and 2 — Electric starting and lighting equipment is available for all models, including the Diesel ODS-6. Lighting equipment includes two front lamps and one rear (combination rear lamp and tail light can be ordered in place of rear lamp). With strong, steady electric light, the tractor can be operated day and night when necessary and can be moved or used safely on the highway at night. Electric starting makes it easy for younger or smaller operators to start and operate the tractor. Electric starting saves fuel too. With the hand-cranking chore eliminated, operators do not hesitate to shut the engine down during idle periods.

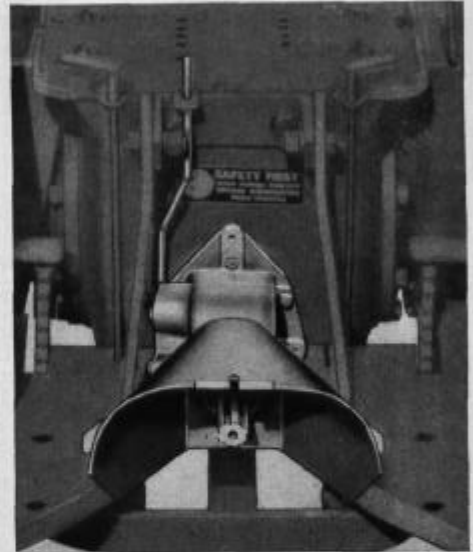


Illust. 3 — A fiber type belt pulley in the appropriate size for a 4 or 6 series tractor is available for all five models. This type of pulley, noted for its durability, assures a satisfactory drive with a minimum of slippage.



Illust. 4 — Special equipment shown on this O-6 tractor includes electric lights, wheel weights on the rear wheels, and the cowl over the steering wheel. The steering wheel cowl, perforated to admit air to the driving compartment, provides a smooth projectionless shield which prevents low-hanging branches and fruit from catching on the tractor as it passes beneath.

Illust. 5 (right) — An A.S.A.E. standard power take-off, complete with protective shield, is available for use with sprayers, dusters, etc. The power take-off, conveniently operated from the driver's seat, is engaged and disengaged by means of the push-pull shifter shown. The operator pulls up to engage; pushes down to disengage.



Illust. 6 (right) — Showing position of the battery (6 volt) and starting motor which are part of the conventional automotive type electric starting equipment supplied for all Orchard and Grove tractor models, including the Diesel ODS-6. (Note: The Diesel ODS-6 has two 6-volt batteries.)



Illust. 7 — Showing the generator which is part of the electric starting and lighting equipment available for all five models. The double sheave on the fanshaft, from which the generator is driven, is regular equipment.



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International Crawler Tractors

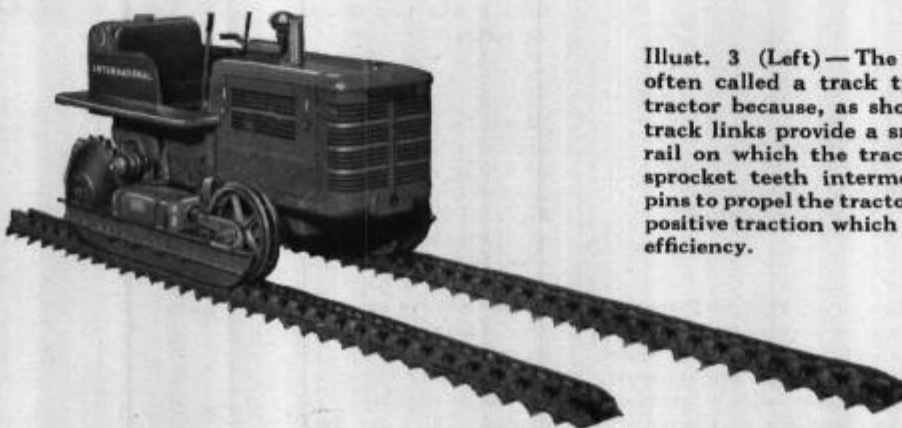
The crawler tractors have steadily increased in popularity for farm work. Crawler treads have a large tractive area in contact with the soil with the result that weight per square inch of ground contact is less than that of wheel tractors. This advantage gives the crawlers good traction in soft ground and loose, sandy soil. The crawlers, too, have great stability and a low center of gravity. These qualities, combined with individual track oscillation, allow them to operate safely over steep slopes and rough ground where the use of wheel tractors would be hazardous. When large acreages must be covered, the larger crawler tractors often furnish the most economical power because of their ability to pull implements hitched side by side and working a wide area, or to accomplish several operations in one trip by towing a combination of implements hitched in

tandem. Crawler tractors can be equipped with power take-off attachments for driving pull-behind equipment and with belt pulleys for operating belt-driven machines.

International Harvester's line of crawler tractors includes six models—the three and four-plow T-6 and TD-6, the five-plow T-9 and TD-9, the eight-plow TD-14, and the big TD-18 capable of pulling three four-bottom 14-in. plows or a total of 12 bottoms. The T-6 and T-9 are equipped with distillate-gasoline engines, in which either distillate or low-grade gasoline may be used. A high compression, straight gasoline engine is optional equipment for each of these tractors. The TD-6, TD-9, TD-14, and TD-18 crawlers have Diesel engines with International's built-in all-weather, gasoline starting system. Specifications and other details follow.

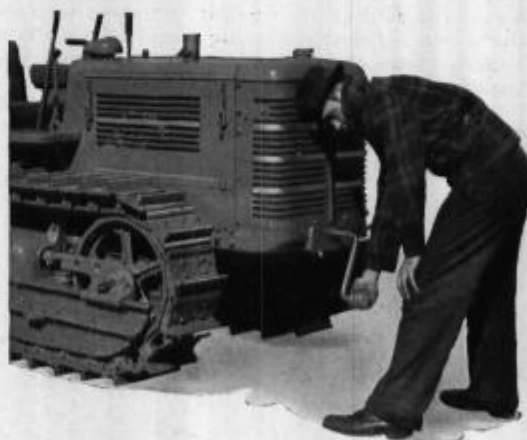


Illust. 1 — The track frame stabilizer and equalizer spring construction permit individual movement of tracks, allowing maximum track-to-ground contact and safety on rough surfaces or hillsides.



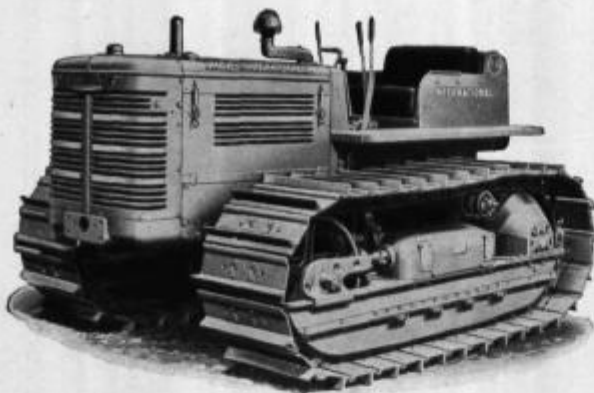
Illust. 3 (Left) — The crawler tractor is often called a track type or track-laying tractor because, as shown at the left, the track links provide a smooth, double steel rail on which the tractor rolls. The rear sprocket teeth intermesh with the track pins to propel the tractor. The result is the positive traction which gives the crawler its efficiency.

Illust. 2 (Below) — International Diesels with the exception of the TD-18 can be cranked by hand any time, anywhere, as readily as gasoline engines of corresponding size, and are ready for work in a moment's time after being started. The TD-18 can be hand-cranked, but comes regularly equipped with electric starting so that hand cranking is unnecessary.

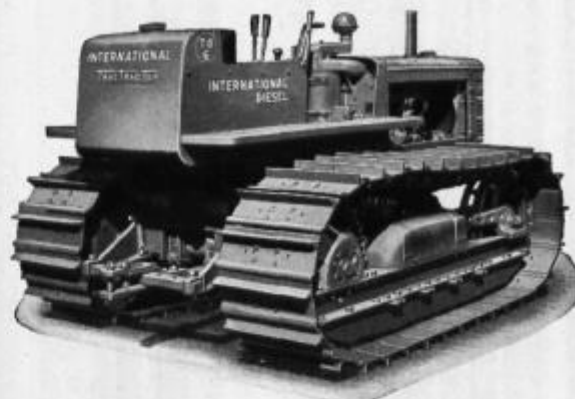


International Crawler Tractors

T-6 and TD-6



Illust. 1 — T-6 crawler tractor with hood side doors.



Illust. 2 — TD-6 Diesel crawler tractor.

The T-6 is a three to four-plow crawler tractor powered by basically the same carbureted engine that is used in the Farmall-M and "6" series farm tractors. This engine may be obtained as a distillate engine for burning low grade fuels or as a high compression straight gasoline engine which uses 70-octane gasoline, exclusively. The T-6 has five forward speeds ranging from 1.5 to 5.4 m.p.h. which, in combination with the variable-speed governor, allows the tractor speed and drawbar pull to be closely adjusted to the work being performed.

Daily work capacity of the T-6 is as follows: plowing 10 to 15 acres; tandem disking, 30 to 40 acres; drilling (14-ft.), 40 to 60 acres; field cultivating, 30 to 40 acres; peg-tooth harrowing, 80 acres and up. Equipped with belt pulley attachment, the T-6 will handle a 28-in. thresher in average conditions and the larger sizes of hammer mills, ensilage cutters, and other belt driven machines. Fuel consumption is from 20 to 25 gallons.

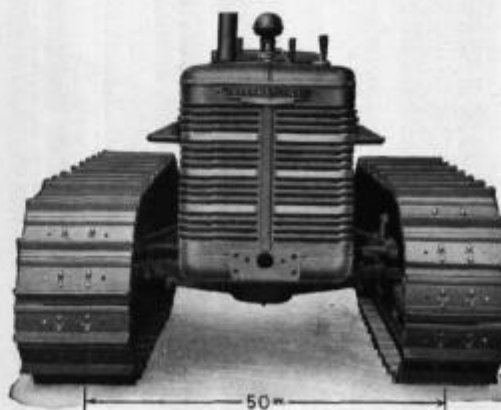
The TD-6 crawler tractor has the same chassis as the T-6 but is built with the efficient Diesel engine that is used in the Farmall-MD and "6" series Diesel farm tractors. Operation of the TD-6 is the same as the T-6, except that the operator has the addition of the starting change-over lever on the TD-6. The TD-6 and T-6 speeds are the same and both have the variable speed governor, which on the TD-6 adjusts the Diesel pump and on the T-6, the carburetor.

The TD-6 Diesel engine may be hand-cranked as readily as the T-6 gasoline engine. The TD-6 is easy to start because the International all-weather starting system is designed into its Diesel engine. The TD-6 Diesel engine, like all International Diesels, is designed so that special lubricants, required by some Diesels, are not needed.

Daily work capacity of the TD-6 is similar to that of the T-6. Fuel consumption: 15 to 20 gallons per day.



Illust. 3 — T-6 tractor with 40-in. tread.



Illust. 4 — T-6 tractor with 50-in. tread.

All International crawler tractors are available in two tread widths; in the case of the T-6 and TD-6, either 40-inch or 50-inch tread as shown above. The wider tread is usually preferred for farm use because it provides greater stability on rough ground and side hills, and because wider track shoes can be used.



International Crawler Tractors

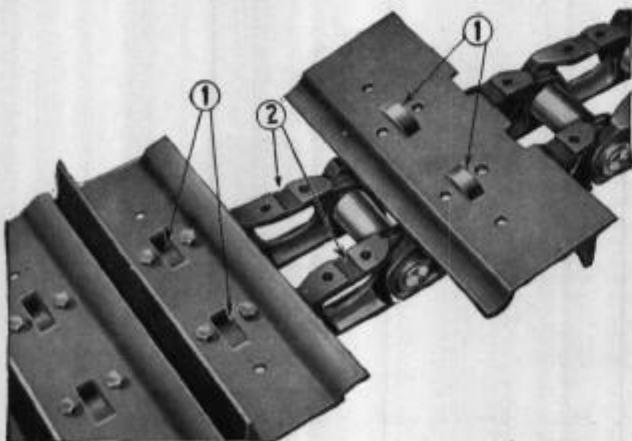
T-9 and TD-9



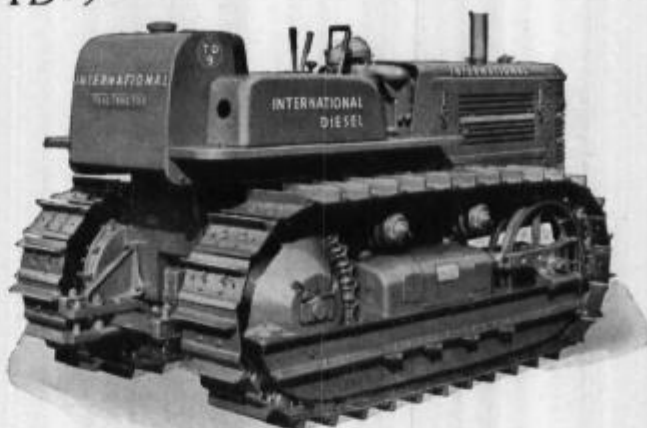
Illust. 1—T-9 gasoline crawler with lights and muffler.

The T-9, rated as a 4 to 5-plow crawler tractor, is the ideal tractor for the man who must work large fields in the shortest time possible but whose total hours of operation in the year would not readily justify a Diesel crawler tractor. The T-9 purchaser has the option of a distillate-gasoline engine which will operate on low cost fuel or a high compression gasoline engine designed for 70-octane gasoline. The T-9 has five forward speeds, ranging from 1.5 m.p.h. to 5.3 m.p.h., and a reverse speed of 1.7 m.p.h. All controls, including the lever which actuates the variable speed governor, are within easy reach of the operator.

Daily work capacity of the T-9: plowing 18 to 22 acres; tandem disking, 40 to 55 acres; peg tooth harrowing (51 foot), upwards of 160 acres; field cultivating, 35 to 45 acres; seeding (depending on size) 40 to 100 acres; combining (depending on size), 30 to 50 acres. With belt pulley attachment: 32-inch thresher and larger, large size hammer mills, ensilage cutters, hay choppers, and any belt driven machine requiring 45 to 50 horsepower. Fuel consumption is from 30 to 35 gallons.



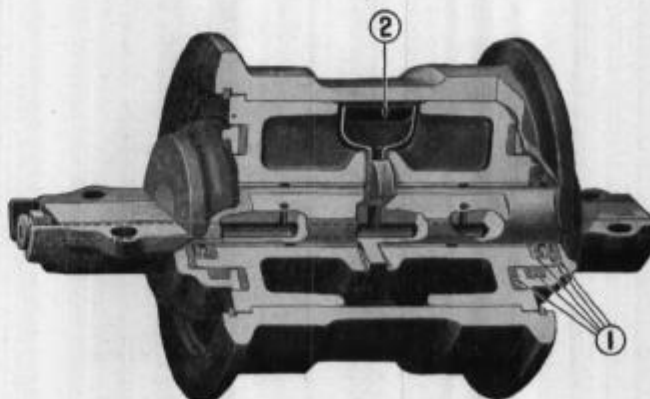
Illust. 2—The heat-treated track shoes are keyed to the track links. Two integral keys (1) in each shoe fit into slots (2) in the track links. Twisting and shearing action is transmitted direct to the keys, relieving stress on the bolts.



Illust. 3—TD-9 Diesel crawler with hood side doors and electric starting attachment.

The TD-9, companion tractor to the T-9, has the same forward speeds, features, and controls, except that it is equipped with the rugged "9" series Diesel engine instead of a conventional gasoline engine. The economy of full-Diesel operation enables the user who works the TD-9 many hours each year to farm large acreages at a low cost per acre. Besides operating large-capacity implements, the TD-9, like other International crawlers, handles easily. A steering clutch and steering brake on each track enable the operator to make gradual or pivot turns as desired. The driver's seat is located so that the operator has easy access to controls and an unobstructed view of the machines being pulled. The TD-9 is available in two tread widths, either 44 or 60 inches, with a size and variety of track shoes to meet every condition.

Daily work capacity of the TD-9 is the same as that of the T-9, except that fuel consumption is less, ranging from 20 to 25 gallons a day.

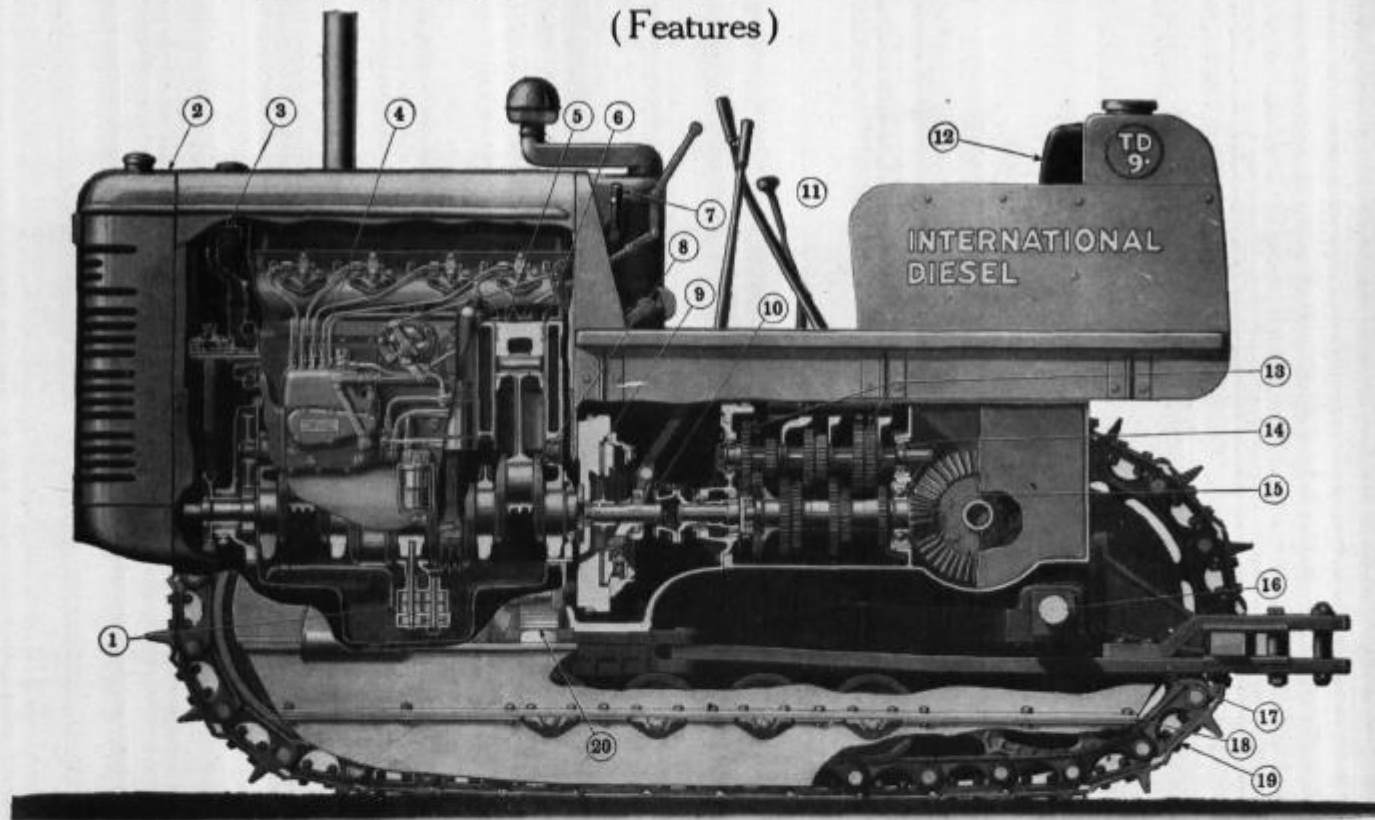


Illust. 4—The five seals (same on both sides) on track rollers are indicated by (1) and the scupper for pressure lubrication by (2). This positive method of lubrication and sealing results in longer life to those members that operate right down in dust, mud, and grit.



International Crawler Tractors

(Features)



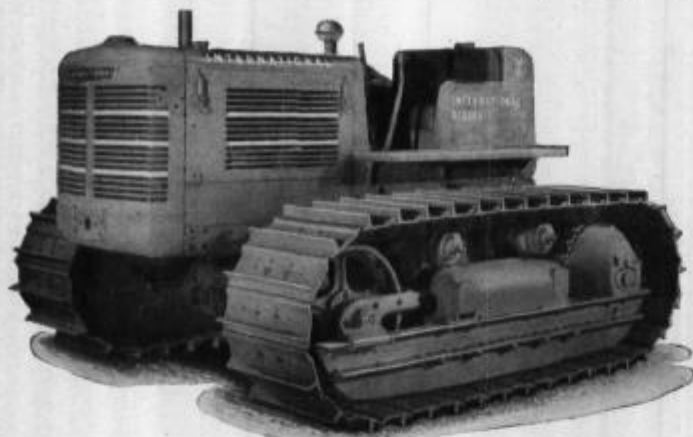
Illust. 1 — The TD-9 Diesel crawler tractor is designed and constructed throughout for dependable, low-cost performance and easy, comfortable operation. This sectional view shows the TD-9 but the general construction of other crawler models is similar.

1. Double oil pump assures positive engine lubrication at all operating angles.
2. Large-capacity radiator of fin-and-tube type.
3. Thermostat-controlled centrifugal pump cooling water system.
4. Compact, accessible, fuel-injection pump with built-in, variable-speed governor.
5. Heavy-duty, four-cylinder, valve-in-head engine.
6. Replaceable cylinder liners.
7. Single lever for manipulating starting mechanism.
8. Heavy-duty, five-bearing crankshaft—rifle-drilled for lubrication.
9. Heavy-duty, single-plate, 13-inch over-center engine clutch.
10. Clutch brake for fast gear shifting.
11. All controls conveniently located and easy to operate.
12. Comfortable, upholstered, spring-cushioned seat.
13. Five-speed transmission mounted on ball bearings.
14. Numerous ball bearings help to deliver more engine power to the drawbar.
15. Bevel pinion and gear in separate sealed compartment from steering clutches.
16. Pivot axle shaft, on which the track frames are mounted through a ball-and-socket joint, that relieves twists on the axle shaft.
17. Heavy-duty drawbar mounted well forward and below pivot axle. Replaceable hardened wearing plates.
18. Welded steel track frame with four lower track rollers, two upper track rollers, front idler, and recoil spring.
19. Track shoes are keyed to track chain to eliminate loosening of track shoes.
20. Heavy transverse spring cushions tractor from road shocks and permits free track oscillation.



International Crawler Tractors

TD-14 and TD-18



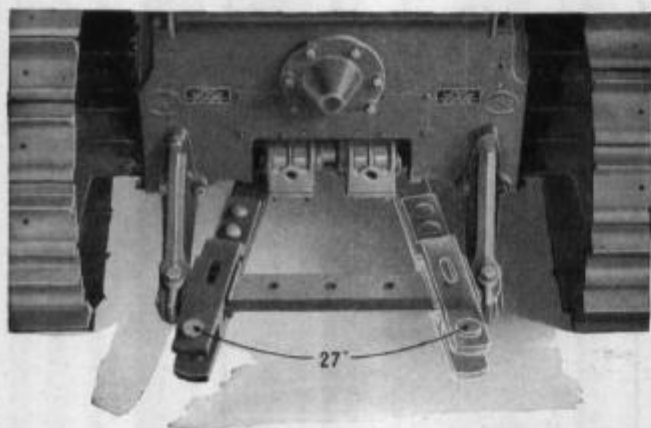
Illust. 1 — TD-14 Diesel crawler tractor with hood side doors.

The TD-14 Diesel crawler tractor provides drawbar capacity for the largest farm operations. This crawler pulls five to eight 14-in. plow bottoms and other equipment in proportion. Where the acreage to be worked is large enough to keep the TD-14 on the job at full capacity, plowing and other heavy drawbar work can be performed at an extremely low cost per acre.

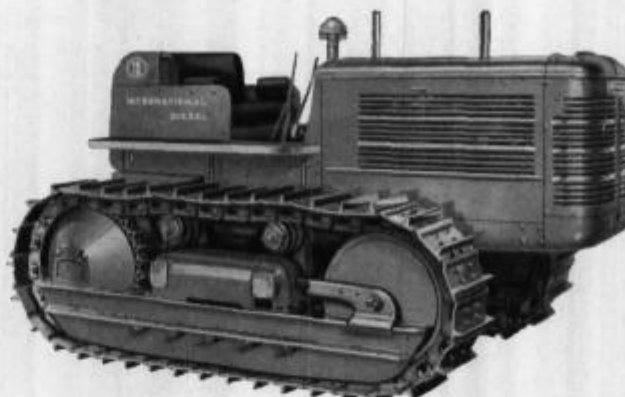
The TD-14 has a four-cylinder Diesel engine which has the excellent features common to all International Diesels, including the all-weather starting system. Six forward speeds, from 1.5 to 5.8 m.p.h., and two reverse, 1.5 and 3.4 m.p.h., give the TD-14 a speed for every condition.

Daily work capacity of the TD-14: plowing, 25 to 30 acres; tandem disking (four 8-ft. harrows), 80 to 100 acres; peg harrowing (four 200-tooth harrows), upwards of 400 acres; seeding (depending on size), 40 to 60 acres.

With belt pulley attachment the TD-14 will handle the largest belt-driven farm machines. Fuel consumption on this tractor is from 26 to 35 gallons.



Illust. 2 — Crawler drawbars have a generous lateral movement. The TD-14 illustrated has a 27-inch swing.



Illust. 3 — TD-18 Diesel crawler tractor with hood side doors.

The TD-18 six-cylinder Diesel crawler tractor has the ability to pull twelve 14-in. plow bottoms at speeds that will turn 40 to 50 acres a day. This huge drawbar capacity fits this big crawler to really large-scale farming operations.

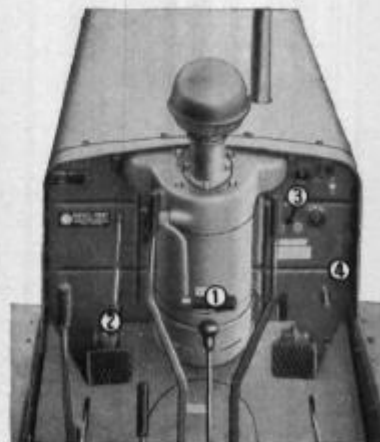
Despite its size, the TD-18 is easy to operate. This tractor is regularly equipped with an electric starter which, in combination with the built-in gasoline conversion starting system, enables the operator to start its big Diesel engine from the tractor seat.

A speed for every working condition is provided by the TD-18's six forward speeds, ranging from 1.5 to 5.7 m.p.h., and two reverse speeds, 1.5 and 3.3 m.p.h.

Daily work capacity of the TD-18: plowing, 40 to 50 acres; disk harrowing (six 10-ft. disks), 150 to 200 acres; sub-soiling (24-in. penetration), 20 acres. With belt pulley attachment, the TD-18 is capable of handling almost any belt driven machine. Fuel consumption is 35 to 45 gallons.

Illust. 4 — It is simple and easy to start a Diesel crawler. The illustration shows the four simple Diesel controls which the operator handles when starting the TD-18, which is regularly supplied with electric starter. To start the engine on the gasoline cycle he sets the speed control lever (1) in the lower position, pushes the compression release lever (2) all the way down, pulls the choke (3), and steps on the starter button (4).

After a short warm-up the operator pushes the compression release lever up, converting the engine to full Diesel operation, at the same time advancing the speed control lever to start the Diesel injection pump feeding fuel to the engine. The engine then operates on Diesel fuel ignited solely by the heat of compression.



International Crawler Tractor

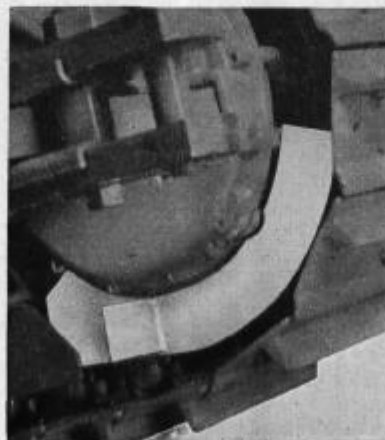
Attachments

	TD-18	TD-14	TD-9	T-9	TD-6	T-6		TD-18	TD-14	TD-9	T-9	TD-6	T-6
Air pipe extension....	Yes	Yes	Yes	Yes	Yes	Yes	Power take-off						
Bi-Metallic steering clutch friction discs.	Yes	Yes	...	...	...	...	Size, S.A.E., inches.	1 $\frac{3}{4}$	1 $\frac{3}{4}$	1 $\frac{3}{8}$	1 $\frac{3}{8}$	1 $\frac{3}{8}$	1 $\frac{3}{8}$
Bumper.....	Yes	Yes	Yes	Yes	Yes	Yes	Splines.....	6	6	6	6	6	6
Combination radiator guard and bumper..	Yes	Yes	Yes	Yes	Yes	Yes	r.p.m.....	1,200	1,350	933	933	862	862
Crankcase guard.....	Yes	Yes	Yes	Yes	Yes	Yes	Power take-off—Reduced-Speed type:						
Cutaway sprocket....	Yes	Yes	Yes	Yes	Yes	Yes	Size, inches.....	2 $\frac{3}{4}$	2 $\frac{3}{4}$	1 $\frac{3}{8}$	1 $\frac{3}{8}$	1 $\frac{3}{8}$	1 $\frac{3}{8}$
Electric lighting.....	Yes	Yes	Yes	Yes	Yes	Yes	(Tpd.) (Tpd.) S.A.E. S.A.E. S.A.E. S.A.E.						
Electric starting.....	Regular	Yes	Yes	Yes	Yes	Yes	Splines.....	...	...	6	6	6	6
Exhaust pipe extension	Yes	Yes	Yes	Yes	Yes	Yes	r.p.m.....	300	337.5	535	535	540	540
Front idler shields....	Yes	Yes	Yes	Yes	Yes	Yes	r.p.m.....	614	691	...	...	...	...
Heavy-duty track roller shields.....	Yes	Yes	Yes	Yes	Yes	Yes	r.p.m.....	800	900	...	...	...	...
High-hitch drawbar..	Yes	Yes	Yes	Yes	Yes	Yes	Radiator guard.....	Yes	Yes	Yes	Yes	Yes	Yes
Industrial (high) seat.	Reg-ular	Reg-ular	*Op-tional	*Op-tional	*Op-tional	*Op-tional	Radiator shield.....	Yes	Yes	Yes	Yes	Yes	Yes
Hood side doors.....	Yes	Yes	Yes	Yes	Yes	Yes	Radiator shutter.....	Yes	Yes	Yes	Yes	Yes	Yes
Hour meter.....	Regular	Yes	Yes	Yes	Yes	...	Reverse-flow fan.....	Yes	Yes	Yes	Yes	Yes	Yes
Muffler.....	Yes	Yes	Yes	Yes	Yes	Yes	Seat—3-man.....	Yes	Yes	Yes	Yes	Yes	Yes
Odometer.....	Yes	Yes	Yes	Yes	Yes	Yes	Spark arrester.....	Yes	Yes	Yes	Yes	Yes	Yes
							Sprocket rock deflector	Yes	Yes	Yes	Yes	Yes	Yes
							Special speed gears —						
							2 $\frac{3}{4}$ and 6 $\frac{1}{8}$ m.p.h.	...	Yes	...	...	...	...
							speeds (3rd and 6th)	...	Yes	...	...	...	...

*No extra charge.

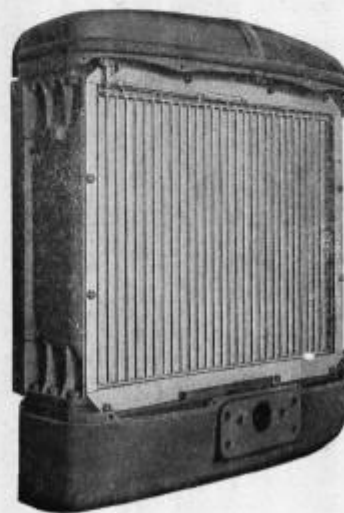
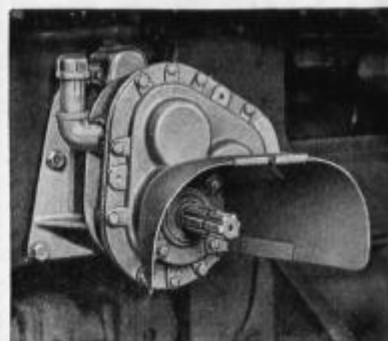


Illust. 1 (Left) — Wide overlapping grouser track shoes for wide-tread crawler tractors. Grouser track shoes are found to give the best traction under most conditions and are regular equipment. A variety of other shoes is available to meet special operating requirements. Special shoe equipment includes ice grousers, flat shoes, and staggered lug grouser snowshoes.



Illust. 2 (Right) — The sprocket rock deflector is recommended where rocks, stones, branches, etc., are encountered.

Illust. 3 (Right) — The reduced speed power take-off attachment is required to drive power farm equipment such as grain and corn binders, combines, and ensilage harvesters.



Illust. 4 — The radiator shutter (left) and heat indicator (above) are regular equipment on the T-6 and T-9 when the distillate engine is furnished. These attachments are special on other models, and are recommended for cold weather operation.

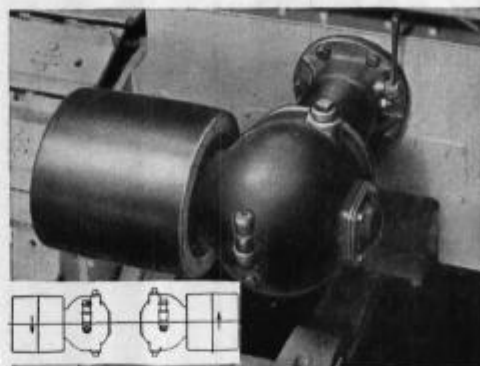


International Crawler Tractors

Belt Pulley Attachments

Belt pulley attachments are available for all crawler tractor models. The belt pulley is mounted at the rear of the tractor and driven from the tractor power take-off as shown in the illustration at right. The pulley can be applied to either the right or the left of the shaft as shown in the sketch in the lower left hand part of the illustration.

A variety of pulley sizes to give the proper belt speed for driving almost any farm machine can be obtained. The table below shows pulley sizes, r.p.m., and belt speed in feet per minute for the pulleys available.



Illust. 1. Belt pulley attachment

Belt Pulleys (Right or Left Hand Application)

MODEL	Diameter	Face	R.P.M.	Belt Speed, Feet per Minute
T-6, TD-6 (Regular Attach.)	12½-in.	8½-in.	811	2,654
T-6, TD-6 (Special)	9½-in.	8½-in.	811	2,017
T-6, TD-6 (Special)	11 -in.	8½-in.	811	2,335
T-6, TD-6 (Special)	13¼-in.	8½-in.	811	2,919
T-6, TD-6 (Special with High Seat)	14¾-in.	8½-in.	811	3,131
T-9, TD-9 (Regular Attach.)	11 -in.	8½-in.	878	2,528
T-9, TD-9 (Special)	9½-in.	8½-in.	878	2,184
T-9, TD-9 (Special)	12½-in.	8½-in.	878	2,873
T-9, TD-9 (Special)	13¾-in.	8½-in.	878	3,160
T-9, TD-9 (Special with High Seat)	14¾-in.	8½-in.	878	3,390
TD-14 (Regular Attach.)	11¾-in.	11 -in.	844	2,595
TD-14 (Special)	10½-in.	12½-in.	844	2,319
TD-14 (Special)	11¾-in.	12½-in.	844	2,595
TD-14 (Special)	13¼-in.	12½-in.	844	2,927
TD-14 (Special)	14¾-in.	12½-in.	844	3,257
TD-14 (Special)	16 -in.	12½-in.	844	3,534
TD-14 (Special)	17½-in.	12½-in.	844	3,865
TD-14 (Special)	19½-in.	12½-in.	844	4,307
TD-18 (Regular Attach.)	13¾-in.	12½-in.	750	2,601
TD-18 (Special)	10½-in.	12½-in.	750	2,062
TD-18 (Special)	11¾-in.	12½-in.	750	2,307
TD-18 (Special)	14¾-in.	12½-in.	750	2,896
TD-18 (Special)	16 -in.	12½-in.	750	3,142
TD-18 (Special)	17½-in.	12½-in.	750	3,436
TD-18 (Special)	19½-in.	12½-in.	750	3,829



International Crawler Tractors

Specifications

	<u>TD-18</u>	<u>TD-14</u>	<u>TD-9</u>	<u>T-9</u>	<u>TD-6</u>	<u>T-6</u>
*Horsepower—Maximum values from observed performance corrected to sea level barometric pressure (29.92 in. of mercury) and 60° F. air temperature according to standard rating codes:						
Belt horsepower.....	91.5	68	45.91	48.69	36.23	38.96
Drawbar horsepower.....	80.5	57	38.88	42.98	29.49	32.92
†Observed Drawbar Pull in pounds at rated governed engine r.p.m.:						
First Gear.....	19,200	14,000	9,014	9,868	7,160	7,652
Second Gear.....	13,400	9,860	6,637	6,904	4,929	5,215
Third Gear.....	10,600	7,980	4,368	4,556	3,368	3,579
Fourth Gear.....	7,760	5,560	3,551	3,650	2,641	2,767
Fifth Gear.....	5,160	3,720	2,304	2,434	1,661	1,756
Sixth Gear.....	3,900	2,890	....	....	....	....
Speeds—Computed at rated governed engine r.p.m.:						
	M.P.H.	M.P.H.	M.P.H.	M.P.H.	M.P.H.	M.P.H.
First.....	1.6	1.5	1.5	1.5	1.5	1.5
Second.....	2.2	2.2	2.2	2.2	2.2	2.2
Third.....	2.7	2.6	3.0	3.0	3.1	3.1
Fourth.....	3.6	3.6	3.9	3.9	3.8	3.8
Fifth.....	5.0	4.9	5.3	5.3	5.4	5.4
Sixth.....	6.2	6.0	...	..	...	...
Low reverse.....	1.6	1.6	1.7	1.7	1.7	1.7
High reverse.....	3.6	3.6	...	...	...	...
Engine—4-cycle, valve-in-head type:						
Number of cylinders.....	6	4	4	4	4	4
Bore and stroke, in.....	4 $\frac{3}{4}$ x 6 $\frac{1}{2}$	4 $\frac{3}{4}$ x 6 $\frac{1}{2}$	4.4 x 5.5	4.4 x 5.5	3 $\frac{7}{8}$ x 5 $\frac{1}{4}$	3 $\frac{7}{8}$ x 5 $\frac{1}{4}$
Piston displacement, cu. in.....	691.1	460.7	334.5	334.5	247.7	247.7
Rated governed speed, r.p.m.....	1,300	1,400	1,400	1,400	1,450	1,450
Piston speed, ft. per min.....	1,410	1,515	1,283	1,283	1,269	1,269
S.A.E., N.A.C.C., or A.M.A. horsepower rating for tax purposes.....	54.15	36.1	31	31	24	24
Fuel.....	Diesel	Diesel	Diesel	Gasoline	Diesel	Gasoline
Engine Lubrication—Crankshaft, connecting rods, camshaft, and valve rocker levers.....	Full Pressure	Full Pressure	Full Pressure	Full Pressure	Full Pressure	Full Pressure
Crankshaft—Tocco hardened:						
Number of main bearings.....	7	5	5	3	5	3
Diameter, main bearings, in.....	3 $\frac{1}{2}$	3 $\frac{1}{4}$	4 $\frac{1}{8}$	3 $\frac{1}{4}$	3 $\frac{3}{4}$	2 $\frac{3}{4}$
Length, main bearings, in.....	13.53	10.45	8.72	6.48	7.72	7.72
Weight, lb.....	212	149	134	106	99	74
Engine Clutch—Single-plate, over-center, with automatic clutch brake:						
Diameter, in.....	17	15	13	13	12	12
Track Dimensions, inches:						
Gauge, center to center of tracks.....	62 or 74	56 or 74	44 or 60	44 or 60	40 or 50	40 or 50
Length of tracks on ground.....	84 $\frac{5}{8}$	78 $\frac{5}{8}$	63 $\frac{7}{16}$	63 $\frac{7}{16}$	58 $\frac{5}{8}$	58 $\frac{5}{8}$

*International crawler tractors, except the new TD-14 and TD-18, have been tested at Nebraska. Official test numbers: TD-9, No. 344; T-9, No. 372; TD-6, No. 345; T-6, No. 346.

†When pulled down by overload, International engines develop approximately 12 $\frac{1}{2}$ % more torque or turning effort than at rated r.p.m. which, at reduced traveling speed, results in increased drawbar pull in each gear.



International Crawler Tractors

Specifications

	<u>TD-18</u>	<u>TD-14</u>	<u>TD-9</u>	<u>T-9</u>	<u>TD-6</u>	<u>T-6</u>
Regular track shoes (keyed and bolted to track links), width.....	18	16	13	13	12	12
Height of regular grousers.....	2 $\frac{1}{4}$	2 $\frac{1}{4}$	2 $\frac{3}{64}$	2 $\frac{3}{64}$	1 $\frac{15}{16}$	1 $\frac{15}{16}$
Track-driving sprocket pitch diameter.....	34.96	30.42	28.25	28.25	24.19	24.19
Track shoe bolts, diameter.....	$\frac{5}{8}$	$\frac{9}{16}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{3}{16}$	$\frac{3}{16}$
Track link pins, diameter.....	1 $\frac{5}{8}$	1 $\frac{1}{2}$	1 $\frac{3}{8}$	1 $\frac{3}{8}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$
Track link bushings, diameter.....	2 $\frac{3}{8}$	2 $\frac{1}{4}$	2 $\frac{1}{16}$	2 $\frac{1}{16}$	1 $\frac{13}{16}$	1 $\frac{13}{16}$
Number of track rollers:						
Bottom.....	10	10	8	8	8	8
Upper.....	4	4	4	4	2	2
Number of track shoes.....	74	72	66	66	64	64
Area of ground contact with regular track shoes, sq. in.....	3,046	2,516	1,649	1,649	1,407	1,407
Pull-bracing grouser area with regular track shoes, sq. in.....	972	864	548	548	465	465
Tractor Dimensions, inches:						
Length overall.....	158 $\frac{1}{4}$	134 $\frac{1}{8}$	114	114	104	104
Width overall, narrow gauge.....	82 $\frac{1}{4}$	74 $\frac{1}{8}$	59 $\frac{1}{8}$	59 $\frac{1}{8}$	53	53
wide gauge.....	94 $\frac{1}{4}$	92 $\frac{1}{8}$	75 $\frac{1}{8}$	75 $\frac{1}{8}$	63	63
Height, tip of grouser to highest point, exclusive of air cleaner and exhaust pipe.....	79	73 $\frac{3}{4}$	63	63	59 $\frac{1}{2}$	59 $\frac{1}{2}$
Height, with industrial seat.....	79	73 $\frac{3}{4}$	66 $\frac{3}{8}$	66 $\frac{3}{8}$	62 $\frac{1}{4}$	62 $\frac{1}{4}$
Minimum ground clearance, from base of shoe (at equalizer spring).....	14	11 $\frac{3}{4}$	10 $\frac{1}{8}$	10 $\frac{1}{8}$	8 $\frac{3}{4}$	8 $\frac{3}{4}$
Drawbar, height (center line of clevis to bottom face of track shoe).....	15 $\frac{3}{8}$	13 $\frac{1}{2}$	13 $\frac{5}{8}$	13 $\frac{5}{8}$	12 $\frac{1}{4}$	12 $\frac{1}{4}$
Lateral movement (at pin).....	31 $\frac{1}{4}$	27 $\frac{7}{8}$	19 $\frac{7}{8}$	19 $\frac{7}{8}$	19 $\frac{3}{4}$	19 $\frac{3}{4}$
Steering Clutches:						
Diameter, in.....	15	15	14 $\frac{1}{8}$	14 $\frac{1}{8}$	10 $\frac{7}{8}$	10 $\frac{7}{8}$
Friction surfaces (each clutch).....	34	24	20	20	22	22
Effective friction area (each clutch) sq. in.....	2,163	1,527	1,233	1,233	1,022	1,022
Steering Brakes:						
Diameter, in.....	17	17	15 $\frac{3}{4}$	15 $\frac{3}{4}$	12 $\frac{1}{8}$	12 $\frac{1}{8}$
Friction area (each brake), sq. in.....	180	135	99	99	71	71
Capacities (U. S. standard measures):						
Cooling system, gal.....	27	19	13	12	10 $\frac{1}{2}$	9 $\frac{1}{2}$
Fuel tank, gal.....	60	45	31	31	20	20
Starting tank, gal.....	1 $\frac{1}{2}$	1 $\frac{1}{3}$	$\frac{2}{3}$	$\frac{2}{3}$ ††	$\frac{2}{3}$	$\frac{2}{3}$ ††
Engine lubrication, qt.....	26	16	11	11	9	9
Transmission case, qt.....	30	24	22	22	16	16
Final drive cases (each), qt.....	5 $\frac{1}{2}$	3	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1	1
Shipping Weights, approx. lb. (without attachments):						
Narrow gauge.....	22,320	15,525	9,525	9,300	7,010	6,700
Wide gauge.....	23,120	16,375	9,900	9,675	7,210	6,900
Additional weight, dunnage.....	130	80	80	80	80	80
Additional weight with fuel tank and radiator filled.....	645	470	325	290	225	225

††Distillate engine only.



INTERNATIONAL HARVESTER



General Tractor Features

In the pages devoted to the various tractor types and models — Farmall, Standard, Orchard and Grove, Rice Field Special, and Crawler — no attempt was made to describe or illustrate noteworthy features common to all types. Such features, where listed, carried a footnote referring the reader to "General

Tractor Features" for full particulars.

This "General Tractor Features" section, then, presents detailed illustrated descriptions of outstanding features of International Harvester tractor design which apply to all or to a majority of the types and models described in the preceding pages.

Three Types of Engine — Gasoline, Distillate, Diesel

International Harvester wheel and crawler type farm tractors other than Diesel are regularly supplied with gasoline engines. But, for the benefit of those who prefer to use a lower grade of fuel, most of these carburetor type tractors are also available with distillate engines. Certain wheel tractor sizes are also available with Diesel engines, and there is a graduated series of crawler tractors, all Diesel-powered.

The three types of engine — gasoline, distillate, Diesel — are necessary in order to utilize to full advantage the three grades of fuel commonly used in agricultural tractors. As a majority of farmers prefer to use gasoline, the Company regularly supplies its carburetor type tractors, both wheel and crawler type, with engines designed for operation on gasoline exclusively.

Many farmers, however, prefer to use distillate, and for these the Company provides a distillate engine which burns this grade of fuel with unexcelled efficiency.

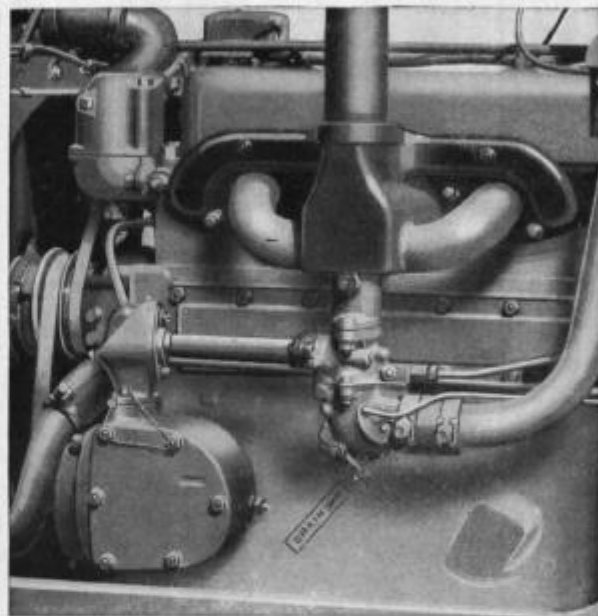
Still other farmers operate on a basis that makes it profitable for them to adopt Diesel power. Consequently International Harvester tractors in selected types and sizes are supplied with compression-ignition engines designed to operate only on low-priced Diesel fuel.

As to which fuel is the best to use, the Company has nothing to say. The Company believes the tractor buyer should decide this question for himself in keeping with local fuel prices, the kind and amount of work to be done, the operating seasons, the geographical location, and his personal preferences. The Company's concern is to give the buyer the type of engine he needs for the fuel he prefers and to build into each type efficiency and economy second to none.

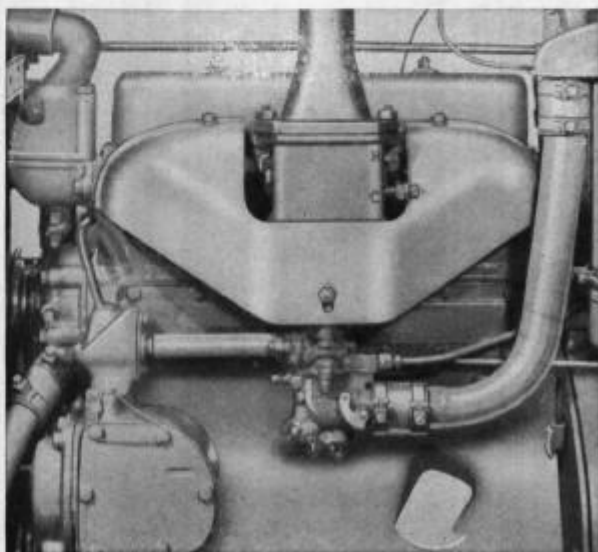
Gasoline Engines

The gasoline engines regularly supplied in IH tractors have a higher compression ratio than the distillate engines supplied as special equipment. The gasoline for these engines should have an octane rating sufficiently high to prevent "pinging" or "knocking" when the tractor is pulling its rated load.

The gasoline engines have an unshielded or "cold" manifold. Gasoline vaporizes readily under all ordinary conditions, so no heating arrangement for the fuel and air mixture is necessary. The "cold" manifold is shown in one of the engine illustrations on this page.



Illust. 1 — The manifold side of a gasoline engine as it appears in the tractor.



Illust. 2 — The manifold side of a distillate, or distillate-gasoline, engine as it appears in the tractor.



General Tractor Features

(Continued)

Distillate Engines

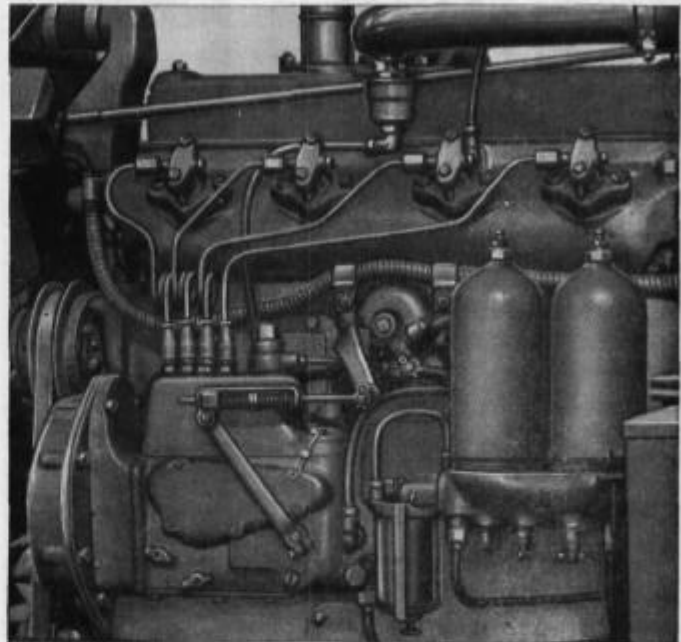
The distillate engines supplied as special equipment in IH tractors are usually referred to as distillate-gasoline engines because of their ability to perform satisfactorily on gasoline when the owner wishes to use that fuel.

The distillate, or distillate-gasoline, engines have a moderate compression ratio to conform to the moderate octane or anti-knock rating of No. 1 distillate. As distillate is not as volatile as gasoline, and does not vaporize as readily, these engines are provided with a shielded intake manifold and a heat control valve by means of which the hot exhaust gases can be directed around the intake manifold to preheat the incoming mixture, promote vaporization, and assure adequate combustion. Other distillate engine features contributing to proper combustion are a thermostat, which maintains a higher temperature in the cooling system, and a radiator shutter. The radiator shutter, controlled from the tractor seat, enables the operator to increase or decrease the flow of air through the radiator, thereby keeping the temperature of the cooling system at the proper level, as shown by the heat indicator. When closed, the radiator shutter shortens the warm-up period and permits switching from gasoline to distillate sooner.

Gasoline can be used with satisfactory results in a distillate engine whenever, for any reason, the owner does not wish to use distillate — as, for example, when using the tractor for miscellaneous jobs of short duration, for wintertime operation, etc. In these circumstances the heat control valve is turned to the "cold" position and the heat shield is removed.

Diesel Engines

International Harvester Diesel-powered tractors appeal strongly to operators whose hours of operation during the year are sufficient to roll up substantial savings in fuel cost and thus offset the higher initial cost of the Diesel-powered tractor. The main consideration in choosing a Diesel-powered tractor is the low cost of Diesel fuel in comparison with that of distillate and



Illust. 1 — Showing the injection pump side of an International Harvester Diesel engine as it appears in the tractor.

gasoline, plus the Diesel's greater efficiency in the utilization of fuel. The Diesel not only uses cheaper fuel but uses less fuel than a conventional engine of the same size. The rate of Diesel fuel consumption per horsepower hour produced is well below that for carburetor type engines.

International Harvester Diesels are as easy to operate as conventional engines. The all-weather quick-start system, described farther on, makes it possible to start an International Diesel with conventional automotive type electric starting equipment or even by hand cranking.

Thus the buyer of an International Harvester farm tractor of whatever type may in most cases order his tractor with an engine specifically designed to burn the fuel of his choice — gasoline, distillate, or Diesel.

Outstanding Fuel Economy

The outstanding fuel economy of International Harvester carburetor type tractor engines is largely the result of extensive research by Harvester engineers using superspeed motion picture cameras to record the progress of combustion following ignition of the fuel mixture by the spark. By observing and experimenting, the engineers were able to perfect the present combustion chamber, which, in comparison with former designs, converts a greater proportion of fuel energy into useful work.

It does so because the design reduces heat loss,

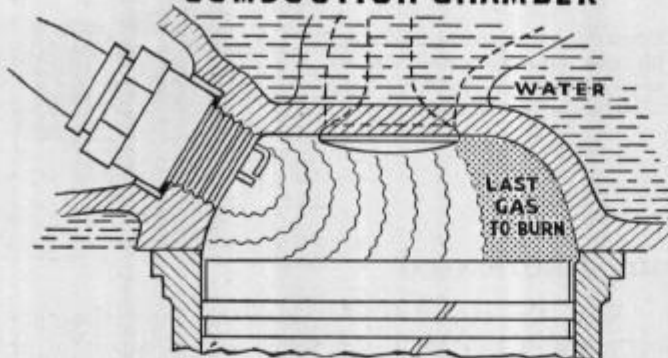
assures uniform combustion, and permits use of a higher compression ratio. As everyone knows, higher compression means more power from a given quantity of fuel, provided the heat of compression and the expanding pressure of the spark-ignited gas do not prematurely ignite the remaining unburned fuel. How International Harvester combustion chamber design avoids this undesirable premature ignition — signaled by "pinging" or "knocking" — is explained in the illustrations on the following page.



General Tractor Features

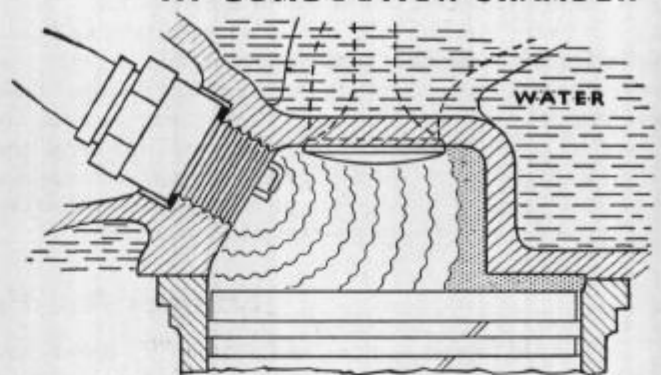
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CONVENTIONAL, DOME-SHAPED COMBUSTION CHAMBER



Illust. 1 — Conventional dome-shaped combustion chamber. When the gas mixture (fuel and air) nearest the spark plug is ignited, combustion progresses rapidly in all directions away from the spark plug. However, a certain amount of the gas mixture farthest from the spark plug is frequently ignited by the heat of compression and the expanding pressure of the ignited gas in the rest of the chamber. This condition is indicated by detonation or engine "knocking," which not only wastes fuel but also contributes to "blow-by," ring sticking, valve sticking, and excessive bearing loads.

IH COMBUSTION CHAMBER



Illust. 2 — International Harvester improved combustion chamber. The shaded area here is the same size as the shaded area in the illustration at left, but all parts of it are close to cooling water. This controls the rate of combustion, permitting progressive uniform burning of the gas throughout the combustion chamber. Also, the unshaded portion of the mixture is burned (where approximately 75 percent of the volume of gas than has the conventional, dome-shaped chamber. As a result, there is less heat loss, which means more heat is converted into power. The resulting high thermal efficiency and smooth operation give not only low fuel consumption but also increased engine life.

Valve-in-Head Engines

With the single exception of the Farmall Cub engine, IH tractor engines are of valve-in-head design. The Farmall Cub, engineered to sell to the small farmer at a low price, incorporates the simpler and less expensive valve-in-block design.

It is generally accepted that valve-in-head engines develop more horsepower per cubic inch of displacement than any other type and that valve-in-head design affords maximum accessibility for inspection of valve clearance and for valve adjustment.

The higher horsepower output is due to the position of the valves. Their location above the piston makes it possible for a given size of engine to take in a greater quantity of fuel-air mixture for each power stroke and to expel a larger proportion of the burnt gases than is possible in other types.

On International Harvester valve-in-head engines the valve mechanism is fully enclosed and sealed against the entrance of dirt and moisture. The rocker arms are

Illust. 3 — International Harvester tractor engines, with one exception, are of valve-in-head design. Advantages of this design are described in the accompanying article.



pressure-lubricated and oil is also fed to the intake valve stems. The valve housing, like the engine crankcase, is ventilated to keep moisture condensation to a minimum. Ventilation, by venting the water vapor, prevents the formation of sludge and possible corrosion of the valve mechanism.

Replaceable Cylinder Sleeves Are Standard on All Models

Replaceable cylinder sleeves, pioneered and popularized by International Harvester, have been accepted by tractor owners generally as the most satisfactory and inexpensive method yet devised for restoring worn engines to full efficiency. Brand-new matched cylinder

sleeves, pistons, rings, and piston pins can be installed in any IH tractor except the Farmall Cub quickly, easily, and inexpensively. The Farmall Cub, built to compete in the low-price tractor market, has the less expensive cast-in-block construction.



General Tractor Features

(Continued)

International Harvester matched sets of sleeves and pistons are exact duplicates of the originals — made on the same machines by the same workmen and subjected to the same rigid quality inspections.

Cylinder sleeves, made with alloy metals, have exceptional wearing qualities. Present-day sleeves are made of close-grained, extremely hard iron and are accurately machined and polished. Their use assures tractor owners of more years of all-around satisfactory performance with minimum cost of maintenance.

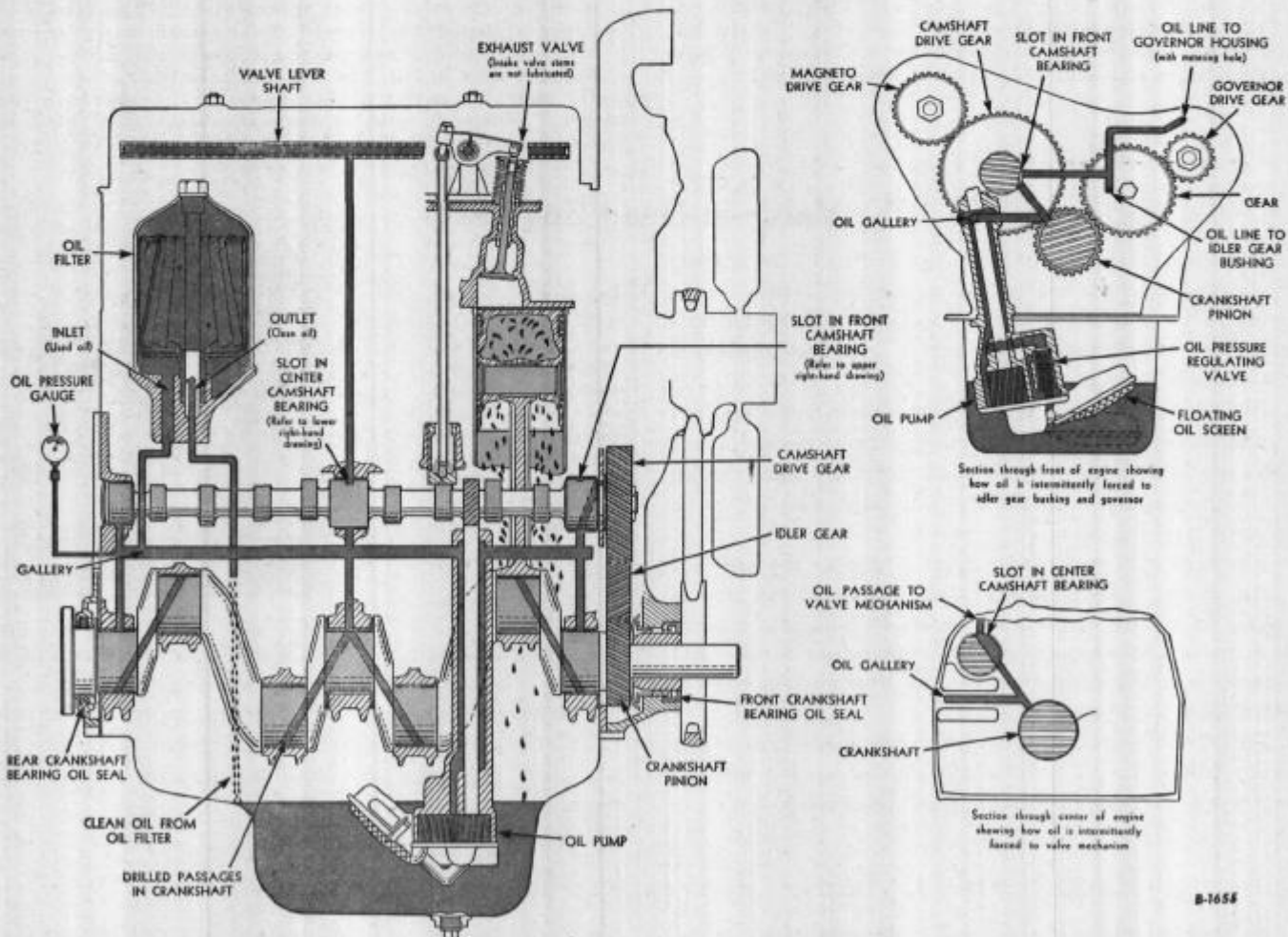
Illust. 1 — Factory-matched pistons and cylinder sleeves can be easily, quickly, and economically installed.



Engines Are Pressure-Lubricated

In all IH Diesel engines and in the "9" series carburetor type engine the lubricating oil is forced under pressure through drilled passageways to the main crankshaft bearings, the connecting rod bearings, the camshaft bearings, and the piston pins, and is also supplied under pressure to the timing gears, valve mechanism, governor, and oil filter.

With the exception of the piston pins, the same parts are lubricated in the same way in all other IH engines. In these other engines the piston pins and cylinder walls are lubricated mainly by the oil forced through the connecting rod bearings and thrown up onto the piston pins and cylinder walls with every revolution of the crankshaft.



B-1658

Illust. 2 — Schematic diagram of lubrication system in International Harvester engines. Note: The carburetor type "9" series engine and all Diesel engines have drilled passageways through the connecting rods for pressure lubrication of the piston pins and have a slightly different arrangement of timing gears. The Farmall Cub lubrication system is similar in principle but in the Cub the oil pump is mounted on the rear end of the camshaft and the valve mechanism is both pressure and splash lubricated.



General Tractor Features

(Continued)

With pressure lubrication all the principal bearing surfaces are positively and continuously covered with a film of cool, clean oil. Pressure is supplied by a gear type pump with a floating screen intake which takes only clean, sediment-free oil from the surface of the pool in the oil pan.

Incidentally the oil that is pumped to or thrown

up to the piston pins and cylinder walls does more than merely lubricate those parts. It also (a) helps to cool the piston, and (b) forms a seal between the piston rings and cylinder wall. As the oil drains down the cylinder walls and drops back into the crankcase it is cooled by the circulating coolant fluid in the full-length water jackets surrounding the cylinders.

Engine Lubricating Oil Is Filtered

International Harvester engines are equipped with an oil filter which was designed to keep oil clean in the severe conditions surrounding farm tractor operation. This filter positively removes all harmful abrasive particles and sludge, thereby permitting 120 hours of operation between oil changes in the case of carburetor type engines and 100 hours in the case of Diesels.

The filter element is double-walled, in order to double the surface exposed to the oil. It is made of two large sheets of filter paper pleated and folded to a cylindrical shape and impregnated with resin to give it durability.

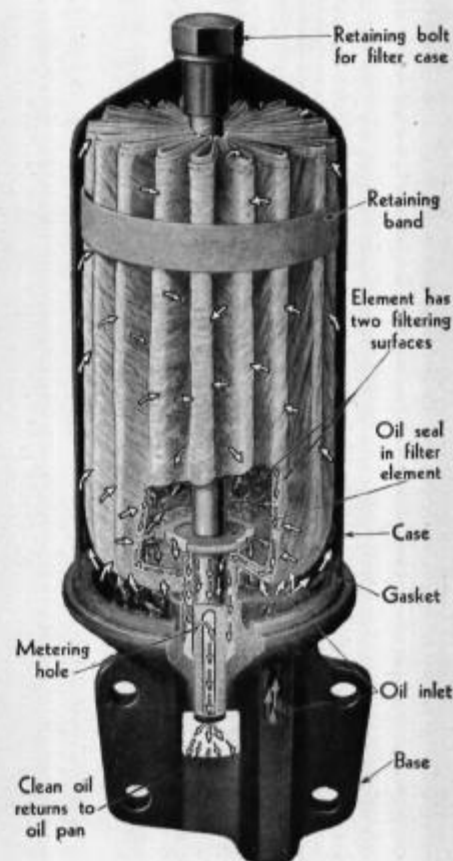
When lubricating oil is kept clean, wear is reduced, replacement of parts is postponed, a high level of performance is maintained, and the useful life of the entire engine is greatly extended.

Engines Are Ventilated

Under certain conditions water and fuel vapors enter the crankcase of an engine from the cylinders. The water vapor condenses and mixes with the oil to form sludge. Fuel vapor condenses and dilutes the lubricating oil. If either the oil or the fuel contains appreciable amounts of sulphur, sulphuric acid forms and attacks steel parts. Corrosion is particularly severe when the engine is idle for long periods.

In order to vent these vapors as formed, and thus prevent dilution, formation of sludge, and corrosion of parts, International Harvester engines are provided with a ventilation system. A breather tube with a filter screen is inserted in the side of the crankcase above the oil level. Another tube goes from the crankcase to the air cleaner inlet pipe, passing en route through the timing gear case, valve housing, and governor housing. The

Illustr. 1 — Cut-away view of the surface type oil filter on International Harvester engines, showing how the oil envelops both the inside and outside surfaces of the double-walled, accordion-pleated, resin-impregnated paper element and passes down between them.



rush of air through the air cleaner inlet pipe creates a partial vacuum in this tube from the crankcase, timing gear case, valve housing, and governor housing and draws the unburned fuel gases and water vapor into the cylinders along with the fuel-air mixture. There the fuel gases are burned and the water vapor is expelled with the exhaust gas.

An Efficient Cooling System

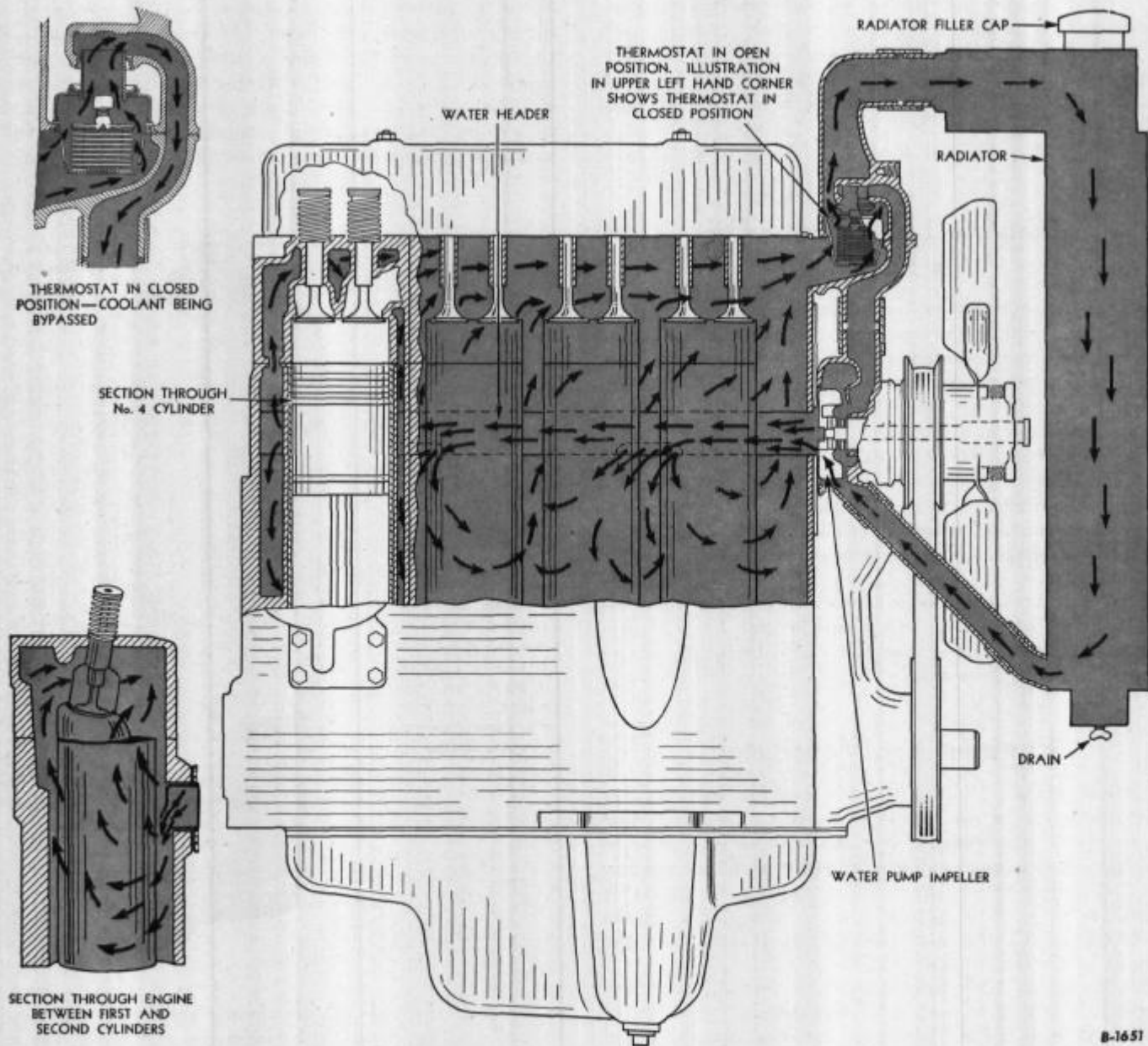
The purpose of a tractor engine cooling system is not only to dissipate unused heat and maintain the proper engine operating temperature but, paradoxically, is also to retain heat and permit the engine to warm up rapidly when "started cold." Rapid warm-up prevents extensive condensation of the products of combustion

during the starting period and minimizes sludge formation, crankcase dilution, and other troubles resulting from too-low engine operating temperatures. Both types of cooling system used in IH tractors — thermo-siphon and pump-circulated — are designed to accomplish these objectives with maximum efficiency.



General Tractor Features

(Continued)



B-1651

Illust. 1 — Diagram of cooling system in International Harvester engines. Note: The engines in the Farmall Cub, Farmall Super-A, and Farmall C tractors and in the U-2A power unit have the thermo-siphon type of cooling system (no thermostat or pump).

The small Farmalls have a straight thermo-siphon cooling system of ample capacity, but all the larger International Harvester tractors are equipped with the pump-circulated, thermostat-controlled, bypass type of cooling system.

In the larger tractors the cooling water or fluid is positively circulated by an impeller type pump driven by the fan. A thermostat in the outlet from the engine block controls the flow. Depending on the temperature of the cooling fluid, the thermostat diverts it either

through a bypass back to the pump or through the upper hose connection into the radiator, or partially through each.

While the engine is warming up, the thermostat does not permit circulation of the cooling fluid through the radiator but diverts it all back to the pump through the bypass. Thus, during the warm-up period, the cooling fluid is circulated only in the engine block, that is, through the full-length jackets around the cylinders and up around the valve ports and combustion chamber



General Tractor Features

(Continued)

in the cylinder head. After the engine has been operated for a time, and is thoroughly warmed up, all or most of the cooling fluid (depending on conditions) is circulated through the radiator, the thermostat opening the inlet to the radiator while closing the bypass.

An additional feature of the cooling system on distillate tractors is the radiator shutter. The radiator shutter is desirable on distillate tractors because of the comparatively low volatility of that fuel and the consequent necessity of keeping the engine operating temperature high enough to assure proper vaporization and combustion. With this shutter, which is regulated from the seat, the operator can cut down the volume of air

passing through the radiator and thus raise the temperature of the cooling fluid when necessary in order to maintain the engine temperature at a satisfactory level as shown by the heat indicator. The radiator shutter, regularly supplied on distillate tractors but available as special equipment for any model except the Farmall Cub, is especially valuable for operation in cold climates and under winter conditions.

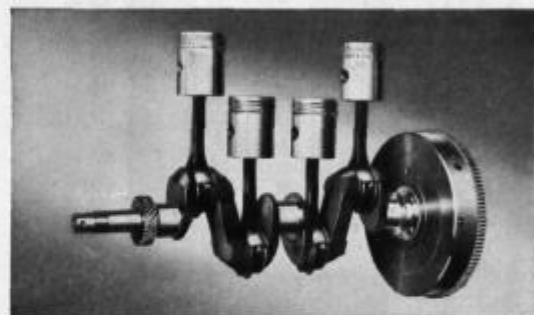
The thermostatic control of the temperature of the cooling fluid, supplemented by use of the radiator shutter when needed or desired, assures a correct engine operating temperature in most conditions and therefore maximum engine efficiency, other things being equal.

Crankshafts Designed for Heavy Duty and Long Life

The crankshaft, backbone of an engine, transforms the straight push of the pistons into rotary power and transmits that power to the power train. A crankshaft must have great strength and durability.

Crankshafts in International Harvester engines are heavy drop forgings of steel, heat-treated to take out stresses set up in the forging operation and balanced both statically (at rest) and dynamically (in motion).

Crankshaft bearing journals and crankpins are hardened by a closely controlled selective heat-treating process known as induction-hardening. This is a high-frequency electrical induction process which produces hard, wear-resistant bearing surfaces while leaving the internal structure of the shaft tough and shock-resistant.



Illust. 1 — Crankshaft of the W-6 Standard tractor, complete with connecting rods and pistons. Bearing surfaces, both journals and crankpins, are induction-hardened and pressure-lubricated. Bearings are the babbitt-lined, steel-back precision type used in carburetor type engines. (Diesel engine bearings are the babbitt, copper-lead, steel-back precision type.)

Replaceable Precision Type Bearings Save Time and Expense

The replaceable precision type crankshaft and connecting rod bearings in International Harvester engines are manufactured with such precision that they maintain for long periods the correct oil film — in other words the correct clearance — between bearing shell and crankshaft journal or crankpin. The length of time the correct clearance can be maintained is contingent on the amount of abrasive substance in the oil. Before wear occurs the bearings provide full, even oil-film contact — no high spots — between the crankshaft and bearing surfaces. Because of their perfect fit these bearings withstand heavy loads without heating.

The foregoing is true whether the engine is new or

whether new bearings have been installed in a reconditioned engine. There is no need of "running in" either a new engine or a reconditioned engine as was once the practice. These precision type bearings are so uniform in size that they can be installed without any reaming, scraping, or fitting. They are completely interchangeable. Moreover, the connecting rod bearings can be replaced without pulling the rods or pistons out of the engine.

Crankshaft bearings can be replaced without removing the crankshaft but this method is not recommended. Usually, when crankshaft bearings fail, other parts of the engine also require attention.

Variable Speed Governor Is Controlled From the Seat

Operators familiar with former methods of throttling tractor engines below their normal speeds can best appreciate the advantages of the present-day variable speed governor controlled from the seat.

Formerly, as engine speed was progressively reduced from the rated r.p.m., the engine showed an increasing tendency to stall. This was so because the throttle lever acted directly on the butterfly valve in the fuel



General Tractor Features

(Continued)

intake and definitely limited the fuel supply, regardless of the load on the engine.

With the variable speed governor, however, this is not the case. The operator, when he moves the variable speed governor control lever to slow down the engine, does not directly close the fuel supply valve. He merely changes the tension on the governor spring, and the governor in turn closes the valve to the point necessary to maintain the desired engine speed. Then, if the load becomes heavy enough to slow the engine down below this selected speed, the governor spring will still permit the fuel valve (butterfly) to open to whatever degree is necessary, up to maximum, to maintain the selected engine speed.

With the variable speed governor the fuel intake valve is free to open fully, if required, at any point in the engine's full-load governed speed range, which usually extends to several hundred r.p.m. below the engine's rated speed. That is to say the tractor will deliver full pulling capacity at the reduced governed engine speed, though naturally at a reduced rate of tractor travel.

Practically, this has at least three advantages to the tractor operator:

1. Gives more flexibility and economy in light work.

The variable speed governor permits belt-driven machines to be operated, within the capacity of the engine, close to their rated speeds under full governor control. This is particularly useful in the case of light loads such as small feed grinders, saws, pumps, hay presses, etc., where maximum horsepower output is not required. Adjustment of engine governed speed downward for light loads naturally results in a marked saving of fuel. The same thing is true of light drawbar work. Frequently, in doing field work, the operator can use a higher transmission gear with a lower engine speed, thus effecting a substantial saving in fuel consumption while obtaining increased flexibility and efficiency of operation.

2. Permits operation at slower tractor speeds. It is often desirable when cultivating small crops, especially for the first time, to cultivate close to the row at a low rate of speed. At low speeds the variable speed governor enables the engine still to develop its full pulling power. Also, when making turns — either running light as in cultivating or under load as in disking — the operator can slow the tractor down and make the turn easily and safely *without shifting gears.*

3. Gives any desired combination of traveling speed and drawbar pull. Using the variable speed governor in



Illust. 1 — With one hand on the steering wheel and the other on the governor control lever, the operator selects the most advantageous engine speed for the transmission speed he is using. Maximum drawbar pull for each gear is obtained at all working engine speeds.

conjunction with the gear shift lever, a tractor operator can select the combination of engine speed and transmission speed that will provide maximum fuel economy and drawbar pull for the particular job he is doing. The job may require a combination of high engine speed and low transmission (traveling) speed, or just the reverse. It may require an intermediate transmission speed and intermediate engine speed, or any other of the possible variations. In all cases, because of the variable speed governor, the operator is assured of getting maximum pulling power in whatever transmission speed he is using.

The variable speed governor control on Diesel tractors is operated in exactly the same way as on the gasoline and distillate tractors. The only difference is that in one case the governor acts on the Diesel injection pump and in the other on the carburetor. On the Diesel tractors the governor, built into the injection pump, controls the amount of fuel injected into the cylinders.

Dependable Ignition In All Conditions

Simple, trouble-free, dependable magneto ignition is a feature of all International Harvester carburetor type

tractor and power unit engines. The magneto is Harvester-designed and Harvester-built. Its electrical output



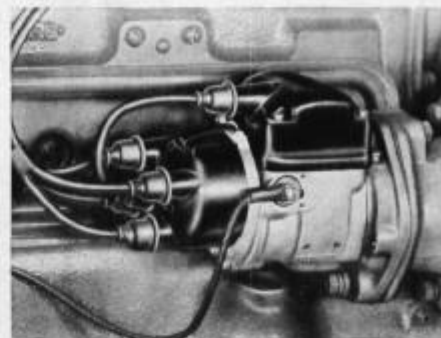
General Tractor Features

(Continued)

is high, assuring a hot spark at the spark plug electrodes. It was designed to give long hours of service in extremes of heat and cold, in dust clouds, and in pouring rain.

The Harvester magneto has many high-grade features. It has an exceptionally strong permanent magnet which never loses its magnetism while in the magneto. The rotor of the magneto revolves on precision type ball bearings. The condenser and coil are moistureproof. The breaker mechanism is in a separate compartment and is thoroughly sealed against the entry of dust and moisture.

The magneto has an automatic impulse coupling which assures a full-size, full-strength spark for starting with only a quarter-turn of the starting crank. The impulse coupling intermittently retards rotation of the rotor, releasing it in a series of accurately timed, spring-propelled, high-speed spurts or impulses which produce a hot spark for starting. After the engine starts, the impulse coupling automatically becomes inoperative. This device assures adequate ignition for starting at any



Illust. 1—This Harvester-made, flange-mounted, waterproof, high-tension tractor magneto has the automatic impulse coupling which assures a full-size, full-strength spark with only a quarter-turn of the starting crank. The magnet in this magneto is exceptionally strong and never requires recharging.

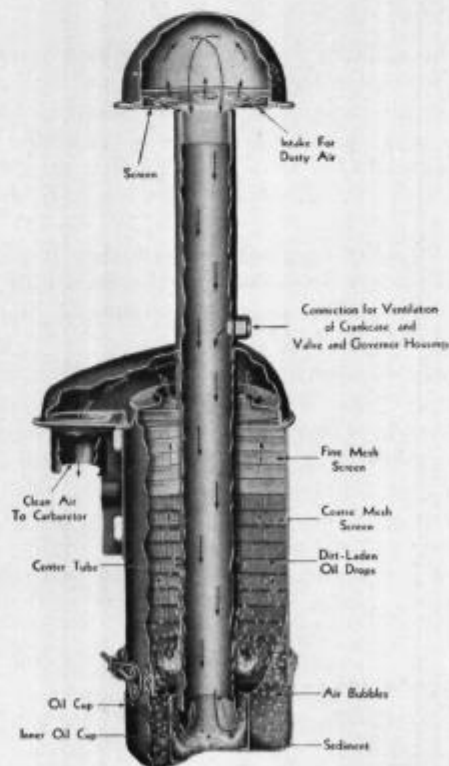
temperature. By retarding the timing of the spark it also eliminates the hazard associated with hand-cranking an engine with the spark too far advanced.

Only Clean Air and Fuel Reach the Engine

Dust is the enemy of precision-fitted machinery, and this fact is especially noteworthy in connection with tractors, which are forced to work in dust and dirt a good part of the time. Fine dust, mixed with fuel or lubricant and carried to the numerous friction surfaces in a tractor, acts as a grinding compound which soon causes abnormal wear and malfunctioning of parts. Dust which is allowed to enter an engine, for example, causes premature wear of pistons, cylinder sleeves, valve seats, valve stem guides, bearings, timing gears, etc.

International Harvester tractor engines are well protected against damage by dust and dirt. They are equipped with the latest type of oil bath type air cleaner. This efficient cleaner removes dirt from the incoming air before it reaches the carburetor.

The oil bath type air cleaner, as the accompanying illustration shows, first screens the incoming air to remove coarse particles, then conducts the air at high velocity down a center tube to an inner oil cup in the main oil cup at the bottom. The incoming air picks up the oil in the inner cup and, in the form of an oily mist, passes up through the fine-mesh screen surrounding the center tube and through the outlet leading to the carburetor. As the oil-misted air passes through this large area surrounding the center inlet tube its speed is reduced, and drops of dirt-laden oil are deposited on the screen. These drops slowly settle back into the main oil cup, carrying the trapped dirt with them. The oil cup can be quickly removed for cleaning.



Illust. 2—Self-explanatory diagram of the oil bath type air cleaner.



General Tractor Features

(Continued)

Fuel Strainer

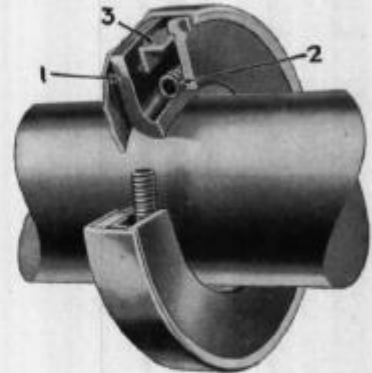
A combination fuel strainer and sediment bowl, set in the fuel line, removes dirt and water from the fuel. The dirt is stopped by a fine-mesh screen and falls into the sediment bowl. Any water that may be present

in the fuel also settles in the glass "settling" or sediment bowl. As both sediment and water are visible to the operator, he can see when the bowl needs cleaning. As a further protection to the engine the dirt-arresting screen in the fuel strainer is supplemented with another screen in the inlet to the carburetor.

Rawhide Seals Keep Oil In, Dust Out

In the belief that internal cleanliness of a tractor offers the best insurance for trouble-free operation, low maintenance, and long life, International Harvester designers have made lavish use of spring-loaded rawhide seals. All external revolving shafts are equipped with these highly efficient safeguards. Rawhide seals prevent dirt, grit, dust, and moisture from working into adjacent bearings and into the lubricant of gear cases. At points where the dirt and dust menace is excessive, double rawhide seals supplemented by a felt washer and dirt slinger or flange, are installed. Every precaution is taken to keep lubricant in and dirt out.

Illust. 1 — Showing construction of a spring-loaded rawhide seal. Note how the oil-treated rawhide washer (1) is shaped to maintain adequate contact with the revolving shaft, under constant pressure of the encircling spring (2). The metal spacer (3) holds the rawhide washer in proper alignment. The seal is dust and oil tight.



Antifriction Ball and Roller Bearings Promote Tractor Efficiency and Long Life

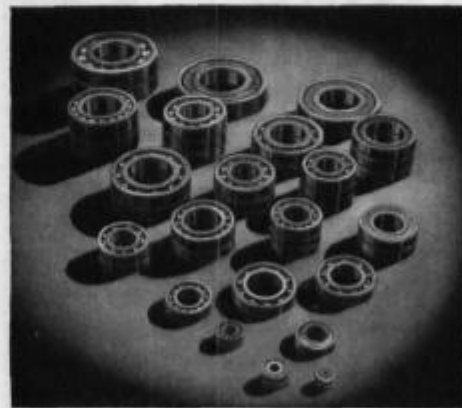
Another quality feature that shows up on International Harvester tractors is the use of ball and roller bearings at all important friction points. These high-grade bearings reduce friction to a minimum, assuring smooth performance and the maximum delivery of engine power at drawbar, belt pulley, and power take-off.

Ball and roller bearings, by reducing friction to the minimum, also reduce wear to the minimum, thereby lowering maintenance cost and prolonging the effective working life of the entire tractor.

Ball and roller bearings are accurate and true-running. As a consequence, vibration and chatter are eliminated and gears are kept in exact alignment and adjustment.

The reliability of these bearings is amazing. No adjustment or repair is ever necessary. Bearings are specially designed to withstand whatever radial or thrust loads their positions in the tractor may impose on them.

Besides prolonging tractor life and reducing service requirements, ball and roller bearings contribute sub-



Illust. 2 — International Harvester tractors are equipped with antifriction ball and roller bearings wherever this type of bearing will reduce friction and wear, and increase power transmission.

stantially to lower fuel cost by delivering for useful work more power per gallon of fuel consumed.

IH Diesel All-Weather Quick-Start System

An International Harvester Diesel engine can be started as easily as a gasoline engine of corresponding size. This is so because of International's unusual starting system. Under this system the operator temporarily

converts the Diesel into a gasoline engine, complete with carburetor, spark plugs, magneto, and a comparatively low compression ratio. When thus converted, the Diesel can be started with conventional automotive



General Tractor Features

(Continued)

type starting equipment or can be cranked by hand, if necessary or preferred. After a warm-up run on gasoline, the operator, by moving one lever, converts the engine to compression-ignition full-Diesel operation.

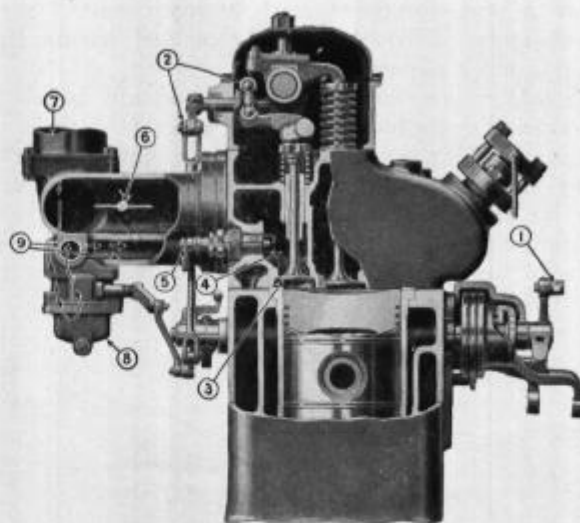
When contrasted with other starting systems this International system is seen to have a number of advantages. One big advantage is that the system is built right into the engine and does not require any auxiliary engine on the outside or any heavy-duty batteries. Electric starting equipment is the common automotive type such as is used on automobiles. Moreover, such is the ease of starting, International Diesels can be readily cranked and started by hand under all ordinary conditions.

Another advantage lies in the fact that the starting gasoline is burned in the combustion chambers and cylinders of the engine, warming the lubricating oil so that it will circulate normally when the engine is switched to the Diesel cycle. This preliminary direct-flame cylinder warm-up conditions the engine very quickly and very thoroughly for the change-over to Diesel operation. Extra running time on the gasoline cycle can be allowed on the coldest mornings.

Another advantage of this system is the relatively high speed, about 800 r.p.m., at which the change to the Diesel cycle is made. At this rate of speed the compression and temperature are adequate for a positive, snappy start on the Diesel fuel.

Still another advantage of International's easy starting is the encouragement it gives to operators to shut down the engine while the tractor is idle, thus saving fuel and avoiding unnecessary engine wear.

Electric starting equipment of the conventional automotive type can be supplied for all International Harvester Diesel engines (it is regularly supplied with the TD-18 crawler). This equipment eliminates the necessity for hand cranking and provides "automobile" ease of starting. It enables the operator to get his tractor on the job quickly, regardless of weather conditions.



Illust. 1— Here's how the simple International Harvester Diesel all-weather quick-start system works. The operator, when he pulls back lever (1) until it latches, accomplishes four things: First, he actuates linkage (2) and opens starting valves (3), reducing engine compression ratio from approximately 14:1 to 6½:1. Second, he energizes previously isolated spark plugs (5) in auxiliary chambers (4). Third, he opens the gasoline shut-off valve in carburetor (8). Fourth, he closes valves (6) in air intake manifold (7), shunting air from the air cleaner as indicated by arrows (9) through carburetor (8) past the regular intake valves into the engine combustion chambers. With these changes made, the engine is ready to be started in the conventional way either by hand cranking or by low-voltage electric starter. After a brief direct-flame cylinder warm-up the operator converts the engine, which is then running at 800 r.p.m. or faster, to full Diesel operation (position shown) simply by tripping lever (1).

4-Cylinder Diesel Engines Are Equipped With International's Single-Plunger Injection Pump

The International single-plunger Diesel injection pump, designed and built by International Harvester, is supplied on all International four-cylinder Diesel engines. This single-plunger pump, engineered specifically for International four-cylinder full-Diesel engines, assures maximum horsepower with clean exhaust, unusual lugging ability, excellent governed speed regulation, low fuel consumption, and long life.

Equal Power from All Cylinders

The fuel injection pump on a Diesel engine must (1) meter the fuel in the exact quantities required by

governor setting and load demands, and (2) distribute it to the right cylinder at the right time in accordance with the firing order of the engine. The International Diesel injection pump meets these two requirements with a single helix type plunger (which takes the place of the individual cylinder plungers in conventional pumps) and four independent distributor valves. International design, by eliminating the extra plungers, greatly simplifies both the construction and the operation of the pump and gives superior performance.

In this pump it is necessary to regulate and govern the fuel output from *one plunger only*. The result is not

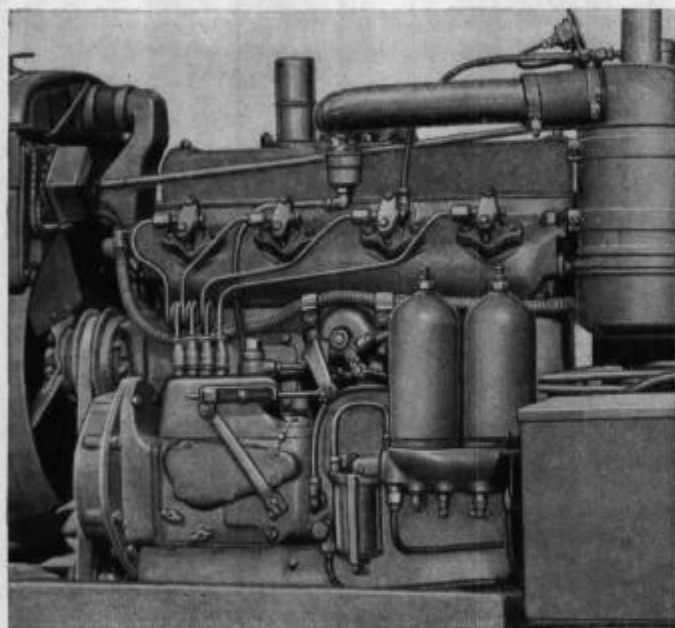


General Tractor Features

(Continued)

only simplified construction but the delivery of equal amounts of fuel to all cylinders when the engine is operating under uniform load at any constant speed. The delivery of equal amounts of fuel means equal power from all cylinders.

In addition to metering the fuel equally to all cylinders this single-plunger pump accurately times the moment of injection. The time in the compression stroke of the engine at which injection starts is always the same for all four cylinders. Distribution of fuel to the cylinders in the right firing order is accomplished by means of the four independent distributor valves previously mentioned.



Illust. 1 — A view of the engine in a Model WD-6 Diesel tractor, showing the location of the International single-plunger injection pump.

Although, in the International single-plunger pump, the single plunger unit does the work of the conventional four in other pumps, experience has shown its life equals or exceeds that of the cam-actuated individual plunger units in other pumps. There is less wear and tear on the single plunger unit. This is accounted for by the fact that the rhythmic up-and-down motion of the International eccentric-driven single plunger assembly is far more uniform and smooth than that obtainable with conventional "jerk type" cam action.

Sensitive Governor Control

Owing to the fact that the governor weights are driven at twice engine speed and are acting on only one plunger, the governor has unusual sensitivity. This governor sensitivity, plus uniform injection, produces a quick response to changing load demands.

Illust. 2 — View of the International Diesel injection pump with the top cover removed, showing how easily the single plunger injection unit can be removed and replaced. It is not necessary to remove the injection pump from the engine in order to remove the plunger.

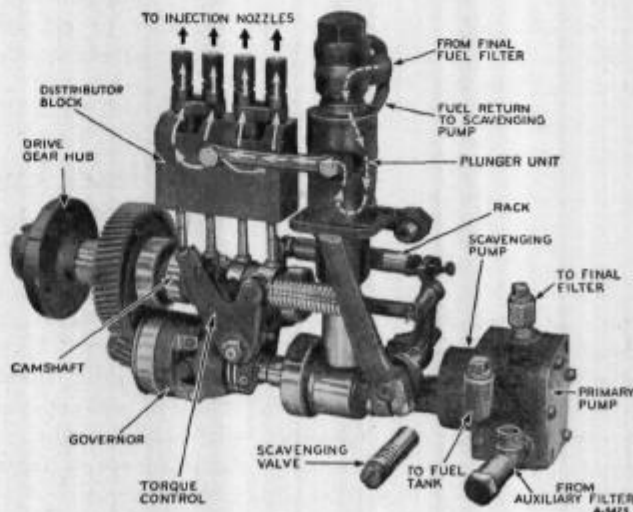


But this governor does more than give acceptable speed regulation from "no load" to "full load." It also incorporates International's specially designed "torque control," which raises the torque, or turning effort, of the engine as its speed is pulled down by overload. This feature assures increased lugging ability for getting out of tough spots and more time for the operator to relieve the engine of overload without "killing" it.

This governor, being built into the pump, has fewer parts and is of a generally simplified and unusually rugged construction.

Exceptional Filtration

For the purpose of preventing excessive wear in the pump parts, even in bad operating conditions, Inter-



Illust. 3 — Skeleton view of the International Diesel injection pump, showing the single-plunger injection unit, distributor block, scavenging and primary pump unit, and governor assembly.



General Tractor Features

(Continued)

national engineers thoroughly sealed this pump and provided an unusually effective fuel filtration system. Even the vent to the pump housing has its own special air filter. Nor is it possible for fuel leakage to contaminate the lubricating oil. Any fuel leakage is immediately returned to the fuel system by a special scavenging pump. These features go far to assure long pump life.

Easily Serviced

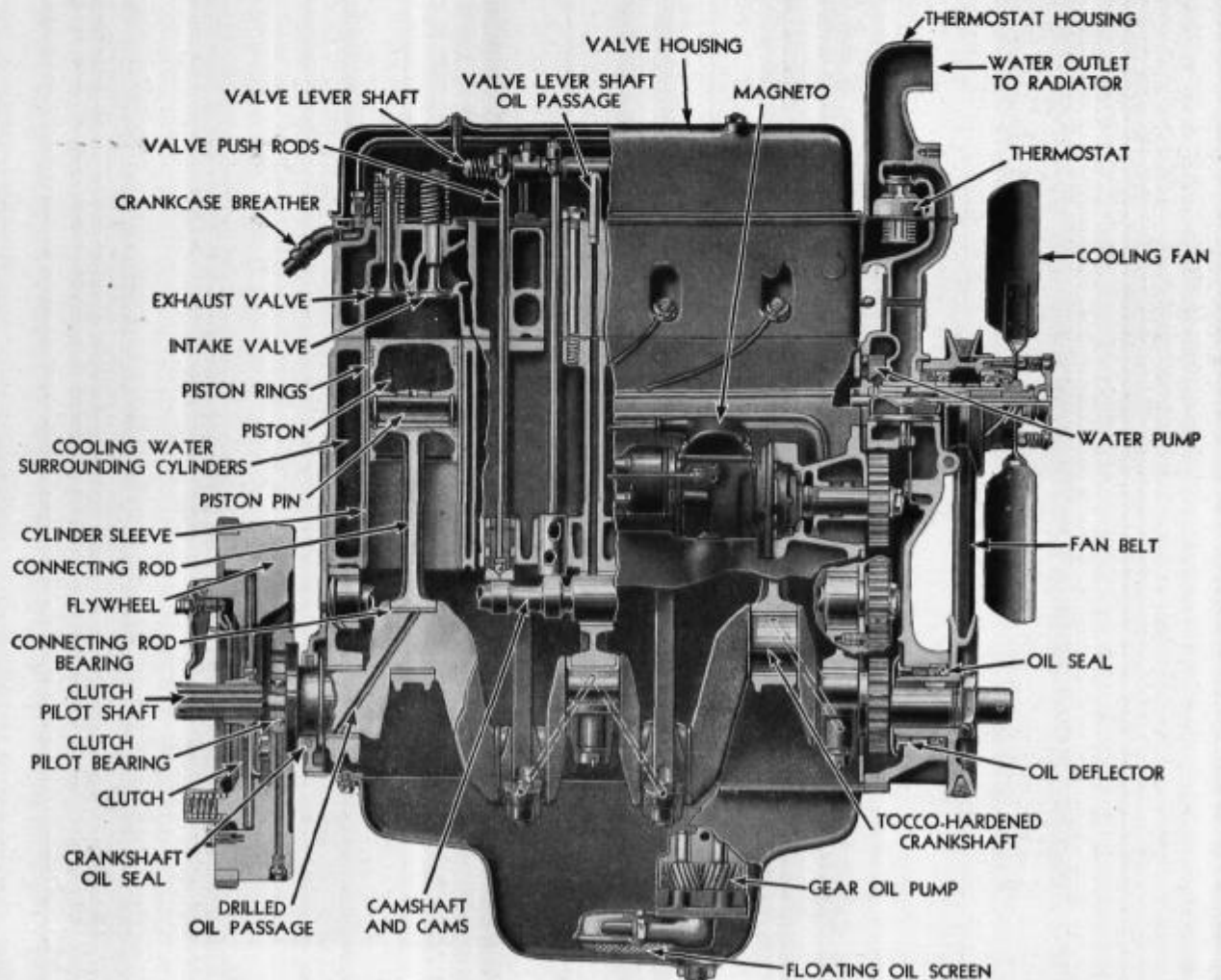
The general construction of the pump greatly facilitates field service. The single plunger assembly, for example, can be readily removed and replaced in the field. The gear type primary pump and the scavenging

pump form a unit assembly that can be removed merely by disconnecting the fuel lines and taking out two cap-screws. The governor spring mechanism is made completely accessible by removal of the large sealed cover plate on the side of the pump away from the engine.

The whole compact flange-mounted injection pump assembly can be removed from, and replaced on, the engine very much as a magneto is removed and replaced. This is a very important feature inasmuch as the cleanliness which is vital to the successful replacement of internal injection pump parts is not often present outside the service station.

Note: The International injection pump on International six-cylinder Diesel engines is similar in principle but has two plungers.

Sectional View of Carburetor Type Engine



Illust. 1 — Sectional view of the Farmall H engine, showing numerous details of design and construction. Other carburetor type engines are similar except in minor details.





PLOWS

Section 2

MOLDBOARD PLOWS

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Farmall Cub

Cub-193 Moldboard Plow

One-Furrow, One-Way



The Cub-193 direct-connected, moldboard plow is designed specifically for use with the Farmall Cub tractor. It is a simple, sturdy plow, built to stand up under the toughest soil conditions. It is ideal for plowing tight little corners, working around or over stumps, rocks, ditches, and grassed waterways. The plow is always under close control, especially when Farmall Touch-Control is provided.

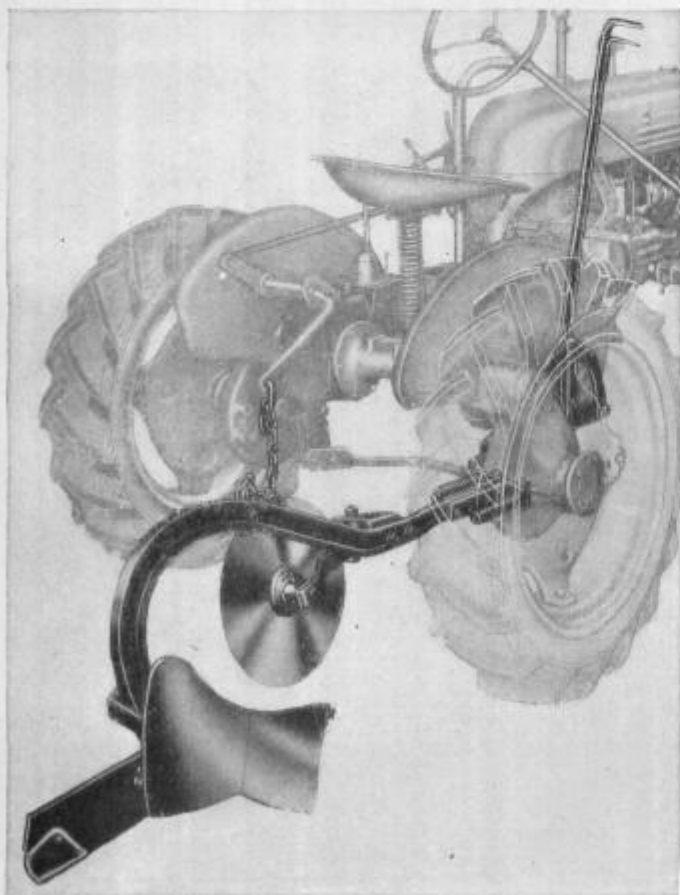
Regular Equipment

16-inch, plain rolling colter. Cushion spring hitch. Depth and level adjusting lever.

Bottoms available, one of which will be furnished as specified:

HA-1-R—12 inch	SL-1-B—12 inch	KA-1-R—12 inch
HA-4-R—12 inch		KA-3-R—12 inch
HA-7-R—12 inch	HSKA-1-R—12 inch	KA-4-R—12 inch
	HSKA-3-R—12 inch	KA-7-R—12 inch
HSB-10-R—12 inch	HSKA-4-R—12 inch	
HSB-15-R—12 inch	HSKA-5-R—12 inch	BA-8-R—12 inch
	HSKA-7-R—12 inch	BA-9-R—12 inch
BBA-2-R—12 inch		
BBA-7-R—12 inch		

See also pages on plow bottoms and accessories.



Illust. 1 — The Cub-193 one-furrow, moldboard plow with a single, 12-inch bottom and a right-hand beam. A 16-inch plain rolling colter is included as regular equipment.

Special Equipment

Bean Attachment, to convert Cub-193 plow to Cub-189 plow with 12-in. L.H. bottom and 16-in. L.H. Colter.

Colter (plain blade) 16-in. with clamp. Colter (notched blade) 16-in. with clamp. Combination jointer, steel jointer, chilled jointer.

Specifications

Plow No.	UNIVERSAL UNITS REQUIRED		Net Weight with one 12-in. bottom (approx.)
	Touch-Control	Manual Control	
Cub-193	No. 512 652 R92 Rear Rockshaft	No. 511 893 R92 Raising Lever and Rear Rockshaft	158 lb.

Simple, Sturdy Plows

The Cub-193 plow consists of a sturdy beam assembly with a drawbar adjusting lever. The beam assembly includes two cushion springs, one 16-inch plain rolling colter, and a right-hand 12-inch plow bottom of the owner's choice. The plow is pulled by a cushioned hitch from the tractor drawbar with the drawbar extending forward and attached to front tractor mounting pads on the rear axle housing. The drawbar adjusting lever is located to the right of the operator. An adjusting link connects the lever to the drawbar which in turn raises or lowers the plow hitch to control the plowing depth. The Cub-193 plow may be used with either manual control or Touch-Control.

- Quick-change attached.
- Spring-cushioned hitch point safeguards the equipment.
- Maneuverable in small fields.
- Farmall Touch-Control or Manual Control.
- Manual-control of the hitch point.

Touch-Control for Easy Lifting

A fingertip touch on the small Touch-Control lever causes a hydraulic system to raise or lower the plow bottom as directed. When working in small fields, crossing grassed waterways, or doing work where the plow must be lifted frequently, Touch-Control proves to be a great time and labor saver.



Farmall Cub
Cub-193 Moldboard Plow
(Continued)

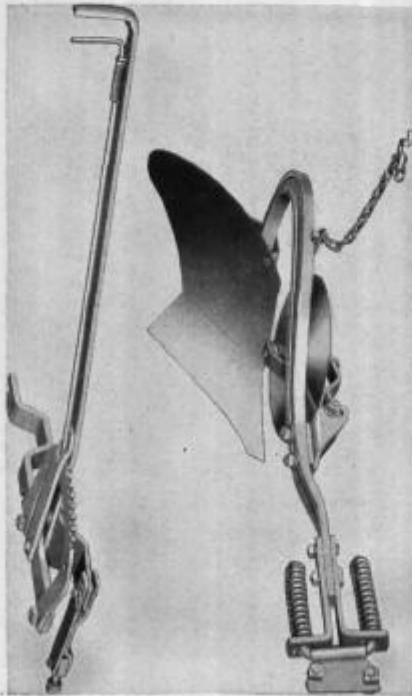


Adjustable Wing Bearing

The wing bearing adjustment on the plow is made by turning the eccentric bolt which holds the front of the plow beam to the extension plates. Turning this eccentric bolt tilts the plow beam to the right or left. This adjustment need not be changed once it has been made for the desired plowing depth.

Spring Cushioned at Hitch Point

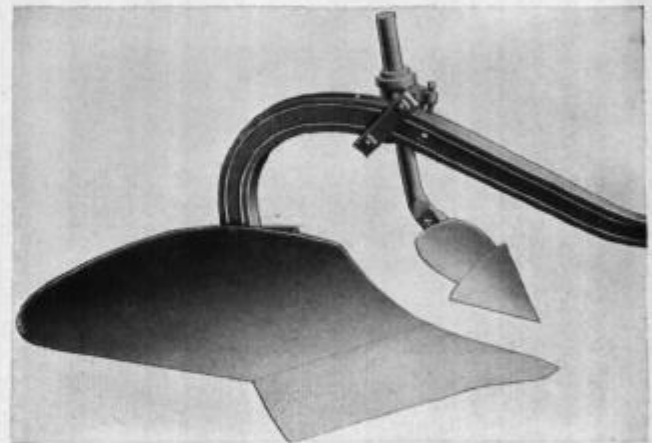
The plow is cushioned with two coil springs — one on each side of the plow beam. This spring-cushioned arrangement absorbs shock when obstructions are encountered. It permits the plow to run straight as an arrow where the ground is level or slightly rolling. When plowing on the contour, one or the other of the springs may be tightened to correct for loose ground or downhill drift of the plow.



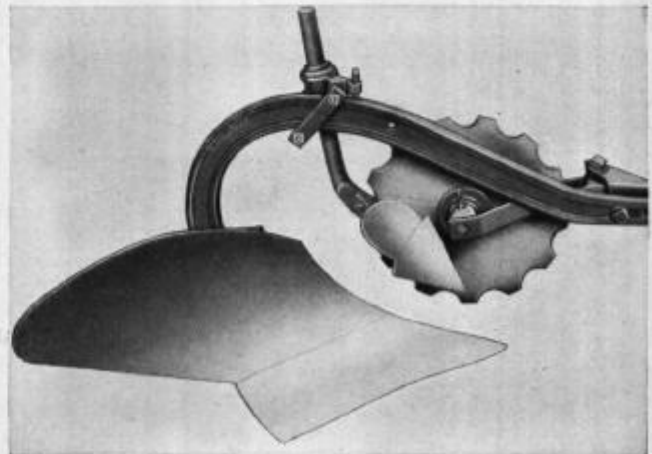
Illust. 2 — The Cub-193 plowing unit removed from the tractor. The depth adjusting lever is connected to the pivoting drawbar. This feature positively controls the plowing depth by lowering or raising the front of the plow beam.



Illust. 3 — Cub-193 plowing unit shown with the combination jointer and notched colter attachments.



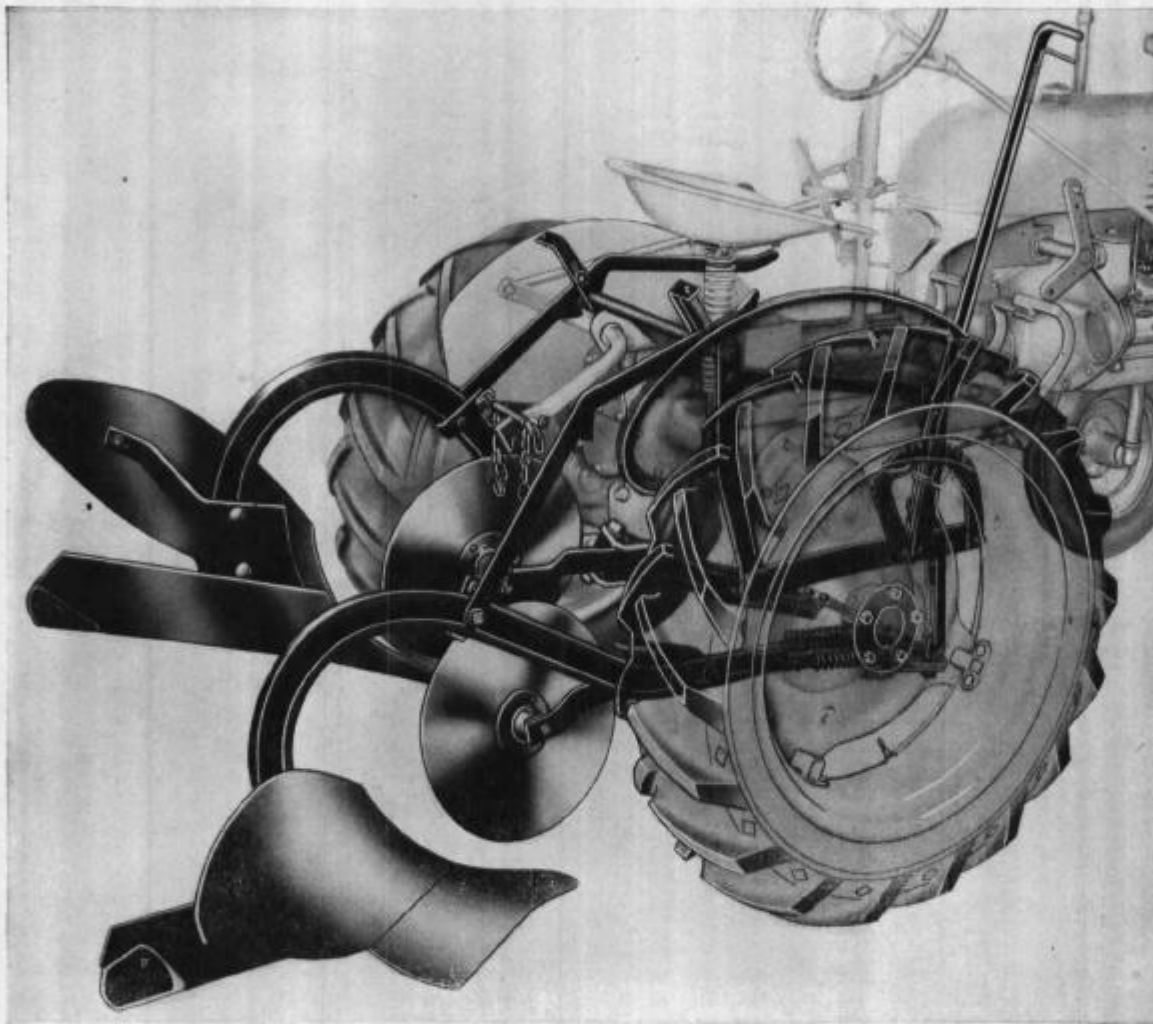
Illust. 4 — Cub-193 plow with stationary jointer attachment.



Illust. 5 — The Cub-193 plow with the notched colter and stationary jointer attachments used in combination.



Farmall Cub
Cub-189 Moldboard Plow
One-Furrow, Two-Way



Illust. 1 — The Cub-189 one-furrow, two-way, moldboard plow.

- Ideal for plowing on the contour and in small plots.
- No dead furrows or back furrows.
- Spring-cushioned hitch point safeguards the equipment.
- Farmall Touch-Control or Manual Control.
- Plowing depth easily changed by manual-lever control of plow hitch.
- Fingertip latching mechanism for effortless lowering of either bottom.

The Cub-189 is a simple direct-connected, two-way moldboard plow, sturdily built to stand up under the toughest soil conditions. Left and right bottoms make it possible to turn all furrows in the same direction, and eliminates dead or back furrows. It is ideal for plowing tight corners, working around or over stumps, rocks, ditches, and grassed waterways. The Cub-189 plow may be used with either manual control or Touch-Control.

Regular Equipment

16-inch, plain rolling colters. Cushion spring hitch. Depth adjusting lever.



Farmall Cub

Cub-189 Direct-Connected Moldboard Plow

(Continued)



Bottoms available. One right-hand and one left-hand will be furnished as specified.

Right Bottoms	Left Bottoms
HA-1-R — 12 inch	HA-1-L — 12 inch
HA-3-R — 12 inch	HA-3-L — 12 inch
HA-4-R — 12 inch	HA-4-L — 12 inch
HA-7-R — 12 inch	HA-7-L — 12 inch
KA-1-R — 12 inch	KA-1-L — 12 inch
KA-3-R — 12 inch	KA-3-L — 12 inch
KA-4-R — 12 inch	KA-4-L — 12 inch
KA-7-R — 12 inch	KA-7-L — 12 inch
BBA-2-R — 12 inch	BBA-2-L — 12 inch
BBA-7-R — 12 inch	BBA-7-L — 12 inch
BA-8-R — 12 inch	BA-8-L — 12 inch
BA-9-R — 12 inch	BA-9-L — 12 inch
HSB-10-R — 12 inch	HSB-10-L — 12 inch
HSB-15-R — 12 inch	HSB-15-L — 12 inch

See also pages on plow bottoms and accessories.

Special Equipment

Colter (notched blade) 16-inch, with clamp. Steel jointer and chilled jointer.

Specifications

Plow No.	UNIVERSAL UNITS REQUIRED		Net Weight (approx.)
	Touch-Control	Manual Control	
Cub-189	No. 512 652 R92 Rear Rockshaft	No. 511 893 R92 Raising Lever and Rear Rockshaft	358 lb.

Simple, Sturdy Plow

The Cub-189 plow consists of sturdy right and left-hand beam assemblies with a drawbar adjusting lever and a latching mechanism. Each beam assembly includes two cushion springs, a 16-inch plain rolling colter, and a 12-inch plow bottom of the buyer's choice. Each plow is pulled by a cushioned hitch attached to the tractor drawbar, with the drawbar in the forward position. The drawbar adjusting lever, part of the plow mechanism, is located to the right of the operator. Raising or lowering the drawbar raises or lowers the plow hitch point and changes the plowing depth.

Touch-Control for Easy Lifting

A fingertip touch on the Touch-Control lever causes the hydraulic system to raise or lower the plow bottoms. When working in small fields, crossing grassed waterways, or doing work where the plow must be lifted frequently, Touch-Control proves to be a great time and labor saver. A rear rockshaft is required for use with Touch-Control for raising rear implements. It raises or lowers the bottoms, as required, for plowing.

Finger-Trip Latching Mechanism

A simple trip mechanism holds both plow bottoms in the raised position until they are needed. A simple flick of the fingers on the trip mechanism is sufficient to release either the right or left-hand bottom to its plowing position.

3½ Acres of Perfect Plowing per Day

The drawbar height controlled from the tractor seat; the adjustable, spring-cushioned hitch; and the easy-to-adjust wing bearing assure perfect plowing. This Cub implement will plow, even to a depth of eight inches, as much as 3½ acres per day in average soil.

Easily Adjusted Wing Bearing

The wing bearing on the plow is adjusted by turning the eccentric bolt which holds the front of the plow beam to the extension plates. Turning this eccentric bolt tilts the plow beam to the right or left. This adjustment need not be changed once it has been made for the desired plowing depth.

Spring-Cushioned Hitch Point

Each plow is cushioned with two coil springs—one on each side of the plow beam. This spring-cushioned arrangement absorbs shock when obstructions are encountered in the field. It also permits the plow to run straight where the ground is level or slightly rolling. When plowing on the contour, one or the other of the springs may be tightened to correct for loose ground or downhill drift of the plow.

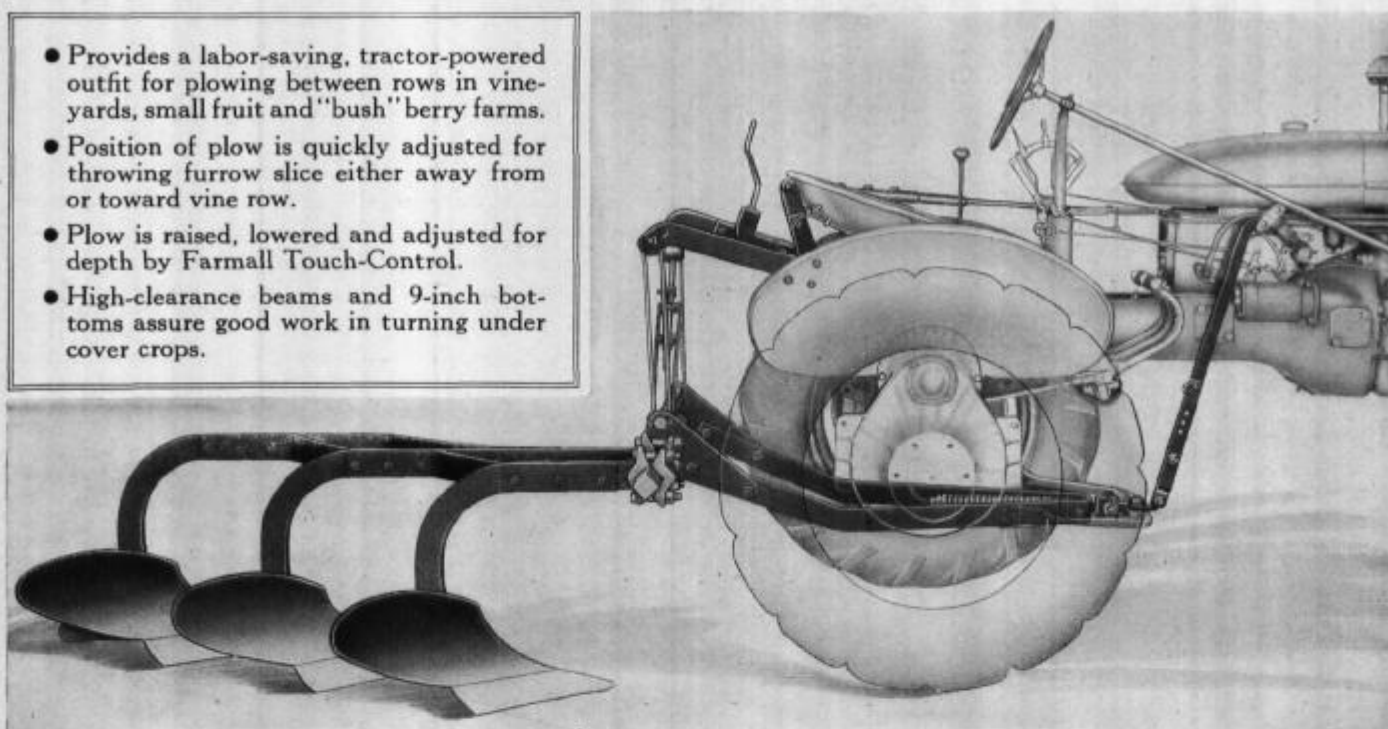


Farmall Super-A

A-397 Vineyard Moldboard Plow



- Provides a labor-saving, tractor-powered outfit for plowing between rows in vineyards, small fruit and "bush" berry farms.
- Position of plow is quickly adjusted for throwing furrow slice either away from or toward vine row.
- Plow is raised, lowered and adjusted for depth by Farmall Touch-Control.
- High-clearance beams and 9-inch bottoms assure good work in turning under cover crops.



Illust. 1 — A-397 Vineyard plow direct-connected to Farmall Super-A tractor. For vineyard plowing, it is recommended the tractor wheels be set for 44-inch tread.

The A-397 vineyard plow is designed for use with the Farmall Super-A tractor equipped with Touch-Control. It provides an ideal labor-saving, power-operated outfit for vineyardists and small-fruit or "bush" berry growers who wish to turn under cover crops and plow between the rows, close to the vines or bushes. The plow can be set either to the extreme right or to the extreme left on the tool bar, as desired. This permits plowing close to vine rows and, also, to reverse the plowing procedure each time the land is plowed so as not to have either back-furrows or dead-furrows continuously in the same location between the rows. The spring plowing, for example, may be made so as to have the back-furrow in the center between the rows. Later on, in fall plowing, the procedure is reversed and the dead-furrow is placed in the center. This avoids throwing the furrow slice continually in one direction, either away from or up to the vine rows.

Three-Furrow Reducible to Two-Furrow

The plow consists of a tool-bar type carrying frame, a rockshaft assembly and beam assembly with three 9-inch bottoms. These bottoms are ideally suited for plowing at a depth of $2\frac{1}{2}$ to 4 inches, which is customary in vineyard plowing, and will turn a 9-inch furrow up to a maximum of 7 inches deep. The plow can easily be reduced to 2-furrow size by removing the first or short beam. The plow is then suitable for ordinary field plowing.

Tool Bar Carrying Frame

The carrying frame includes a $1\frac{3}{4}$ -inch square tool bar to which the beams are clamped, permitting quick adjustment to any point on the bar. The tool bar is attached to the tractor drawbar by means of a V-shaped frame and cushion spring hitch. The drawbar is set in reverse position, extending forward on the tractor ahead of the rear axles.

Operated by Touch-Control

The rockshaft is operated from one of the left Touch-Control power arms so that the plow is raised and lowered by hydraulic power. The drawbar, which is free to pivot, is connected to the right Touch-Control power arm so the plowing depth is also regulated by hydraulic power. A screw crank, within easy reach of the operator, adjusts the left rockshaft arm for leveling the plow or for setting it at an angle when it is desired to plow shallow near the vine row so as to avoid injuring the roots.

Regular Equipment

Three 9-inch bottoms (HV-2 front; HV-2MN rear).

Special Equipment

Two 16-inch rolling colters. Gauge wheel with pneumatic tire.

Specifications

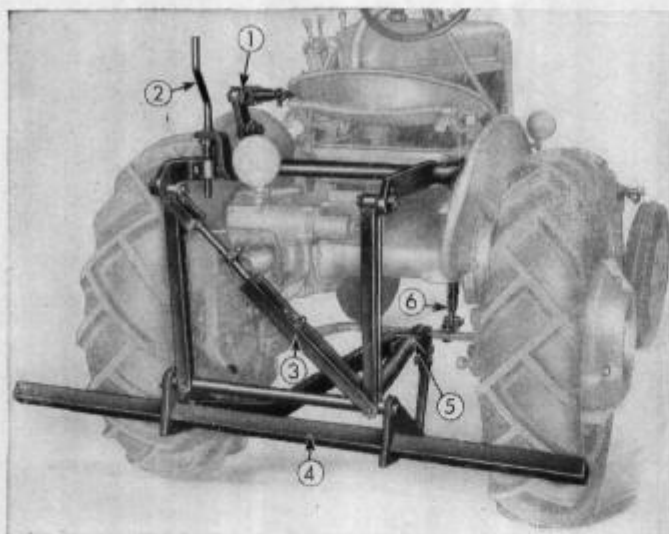
Plow	Size	Width of Bottoms	Average Plowing Depth	Net Wt. (Approx.) Lbs.
A-397	3-furrow reducible to 2-furrow	9-in.	$2\frac{1}{2}$ to 4-in.	457



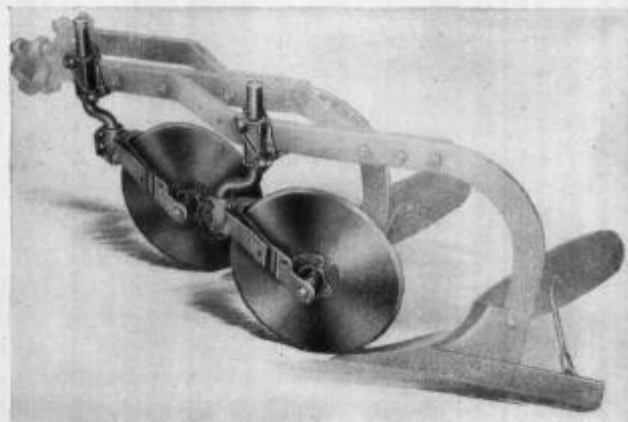
Farmall Super-A

A-397 Vineyard Moldboard Plow

(Continued)



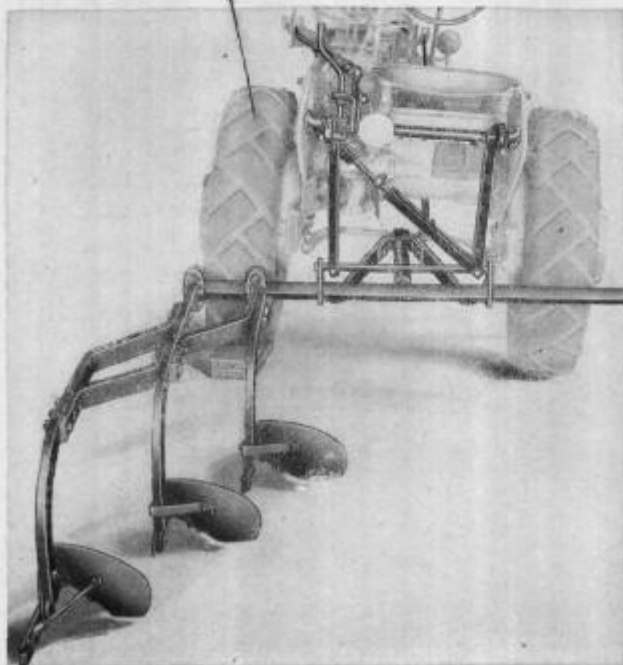
Illust. 1 — This shows the carrying frame with tool bar and rockshaft assembly mounted on the tractor. (1) indicates the rockshaft arm and connecting rod actuated from the Touch-Control power arm. (2) is a screw crank which is used for leveling the plow or for setting it at an angle so as to plow shallow next to the vine row. (3) diagonal linkage may be set to hold plow in rigid position or may be adjusted to allow plow to move from side to side. (4) is tool bar to which the plow beams are clamped. (5) indicates cushion spring hitch. (6) is linkage which connects the drawbar to the Touch-Control power arm for regulating the plowing depth.



Illust. 3 — Rolling colter attachment available as special equipment. It is used only with the 2-furrow plow.



Illust. 4 — The pneumatic-tire gauge wheel, available as special equipment, is used when conditions warrant additional depth control.



Illust. 2 — When set in this position the plow will operate close to the vine row and throw the furrow slice away from the vines.



Illust. 5 — Plow set in position for turning the furrow slice toward the vine row. The dead-furrow will be in the center space between the rows.



INTERNATIONAL HARVESTER



One-Furrow Farmall Moldboard Plows

A-192, AV-192, B-192 and BN-192

- Close-coupled for easy handling in any field.
- Long beam with *front-end* depth control and cushion spring.
- Parallel-link rear suspension for easy steering.
- Choice of hand or power lift.

Here are compact, sturdy plows to do a man-sized job in any field. The entire plow is carried on the tractor, thereby eliminating the cost of wheels and frame and making it easy to maneuver the unit in small, irregular plots or on the contour. All four plows are of the same general design; the prefix in each plow model number indicates the Farmall model for which the plow is designed.

Each plow has a full-length, floating beam to assure steady running. The depth of plowing is controlled from the *front* of the beam. A convenient hand lever raises and lowers the beam to the desired depth. The cushion spring at the front of the beam protects both plow and tractor when an obstruction is encountered. The gauge wheel assures uniformity of depth when the tractor travels over uneven ground (regular equipment on B-192 and BN-192, special on A-192 and AV-192).

Parallel-link suspension at the rear permits the beam to freely swing from side to side so that the action of the plow cannot interfere with steering the tractor. A clamp is provided on the diagonal link for holding the plow rigid when finishing up a land. The easy-acting leveling screw is located directly behind the operator's seat.

The plows can be supplied either with hand lift or for use with pneumatic Lift-All. Other equipment is available as listed below.

See also pages on *Plow Bottoms and Accessories*.

Regular Equipment

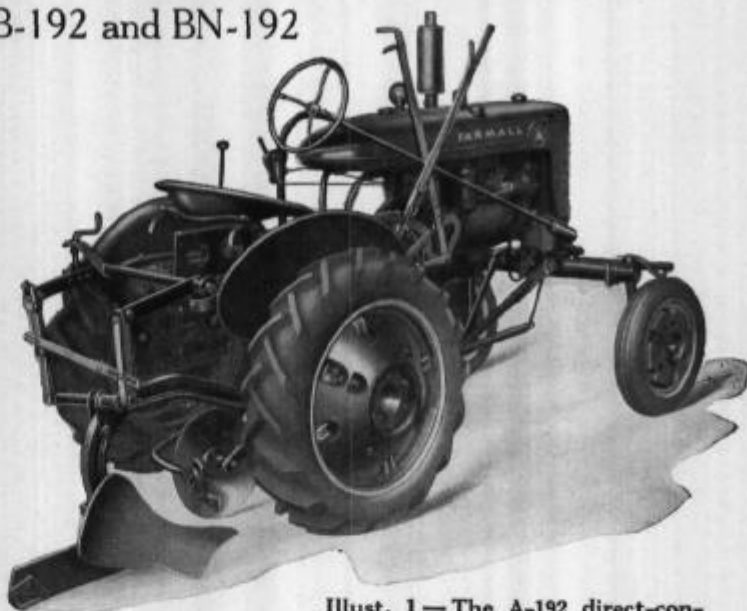
BBA, GA, HA, HSKA, KA or SL bottom, as ordered; see Specifications for sizes. Hand lift or power lift, as ordered. Cushion spring hitch. 16-in. plain rolling colter. Steel-tire gauge wheel on B-192 and BN-192.

Special Equipment

16-in. notched colter. Combination-type 16-in. rolling colter and jointer in steel or chilled; also with notched colter. Stationary jointer in steel or chilled. Steel-tire gauge wheel for A-192 and AV-192. Gauge wheel with 4.00 x 9-in. 4-ply pneumatic tire. Hillside shifting hitch in lieu of regular for A-192. Hitch plate and clevis bundle for BN-192 (provides convenient lateral adjustment of beam).

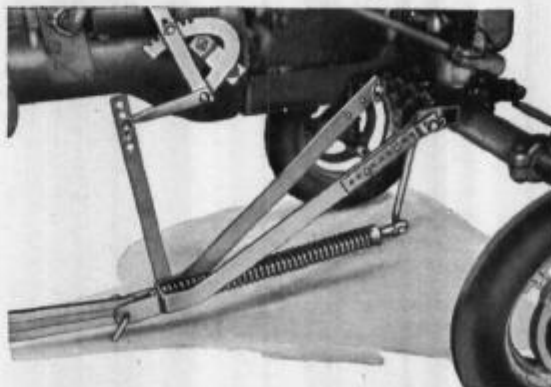
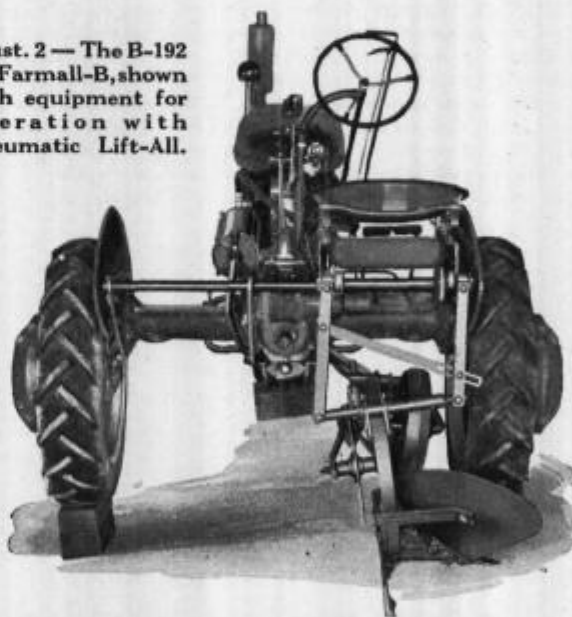
Specifications

Plow	Net Weight, (Approx.) — Lb.		
	12-in.	14-in.	16-in.
A-192	320	331	334
AV-192	...	393	407
B-192	450	460	465
BN-192	450	460	465



Illust. 1 — The A-192 direct-connected one-way moldboard plow, hand lift, for Farmall-A.

Illust. 2 — The B-192 for Farmall-B, shown with equipment for operation with pneumatic Lift-All.



Illust. 3 — A long cushion spring protects both plow and tractor when a hidden rock, root, or other obstruction is encountered.



INTERNATIONAL HARVESTER

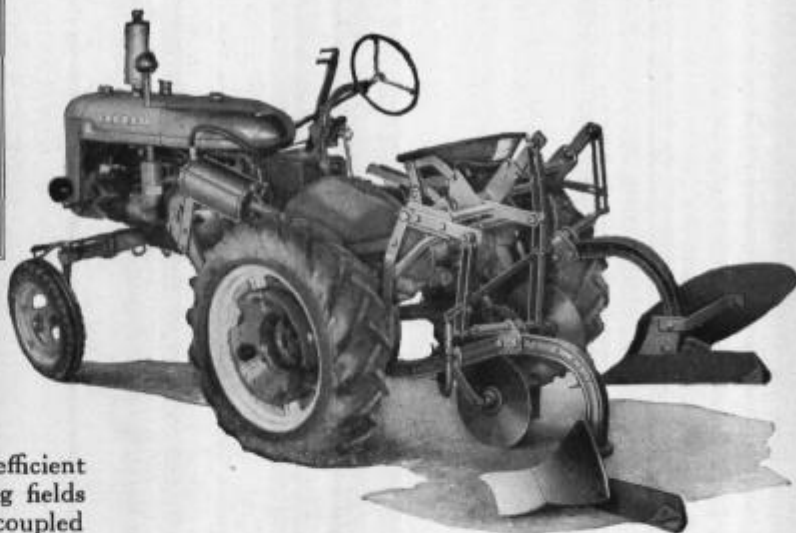


Farmall Two-Way Plows

A-187, B-187 and BN-187

- Compact, easy-handling two-way plows—for irrigated lands and hillside fields.
- Full-length independent beams with *front end* depth control and cushion spring.
- Parallel-link rear suspension for easy steering.
- Power lift or hand lift (as specified).

Illust. 1 (Right)—The A-187 1-furrow two-way Farmall moldboard plow equipped for use with pneumatic Lift-All.



The Farmall two-way plow is a highly efficient and economical outfit for work in hilly or rolling fields or land under irrigation. Because it is close-coupled to the tractor the plow is very easy to maneuver on curves and in "tight" spots such as in corners and along fence rows.

Each bottom is carried on its own full-length beam, suspended at the rear by parallel links to provide ample freedom for easy steering. When one bottom is lowered into the ground it automatically assumes the proper working angle. As the other bottom is raised it comes up to a position where it cannot interfere with the operation of the working bottom.

Slotted diagonal bars on the links keep the bottoms away from the tractor drive wheels and prevent their cutting too wide when making turns. Convenient adjustment for leveling the bottoms is provided on each of the rockshaft arms.

The same plow, with slight differences in attaching parts, is available for Farmalls A, B and BN, as indicated by the prefixes in the plow model numbers. Either hand

lift or power lift can be supplied, as ordered. The hand-lift plows have an easy-acting spring-balanced raising lever for each bottom. The power-lift plows have handy trip levers beside the operator's seat for quickly interchanging the bottoms.

Depth is regulated at the front of the beams by a convenient lever. The long cushion spring protects both plow and tractor when a hidden obstruction is encountered. Gauge wheels, to assure uniformity of depth when the tractor travels over uneven ground, are regularly supplied on the B-187 and BN-187 and are available, when ordered, for the A-187.

See also pages on *Plow Bottoms and Accessories*

Regular Equipment

BBA, GA, HA, HSKA, KA or SL bottoms in 12, 14 or 16-in., as ordered. Hand lift or power lift, as ordered. Cushion spring hitch. 16-in. plain rolling colters. Steel-tire gauge wheels on B-187 and BN-187.

Special Equipment

16-in. notched colters. Combination-type rolling colters and jointers in steel or chilled; also with notched colters. Stationary jointers in steel or chilled.

Steel tire gauge wheel for 187. Gauge wheel with 4.00 x 9-in. 4-ply pneumatic tire. Diverting rods for hillside plowing for A-187. Hitch plate and clevis bundle for BN-187 (provides convenient lateral adjustment of beam).

Specifications

Plow	Net Weight (Approx.) — Lb.		
	12-in.	14-in.	16-in.
A-187	650	672	678
B-187	786	808	814
BN-187	772	794	800



Illust. 2 — The B-187 plow with hand lift. Operation of the raising levers is made easy by counterbalancing springs. A furrow guide, attached above the tractor front wheel, is supplied with both B-187 and BN-187.



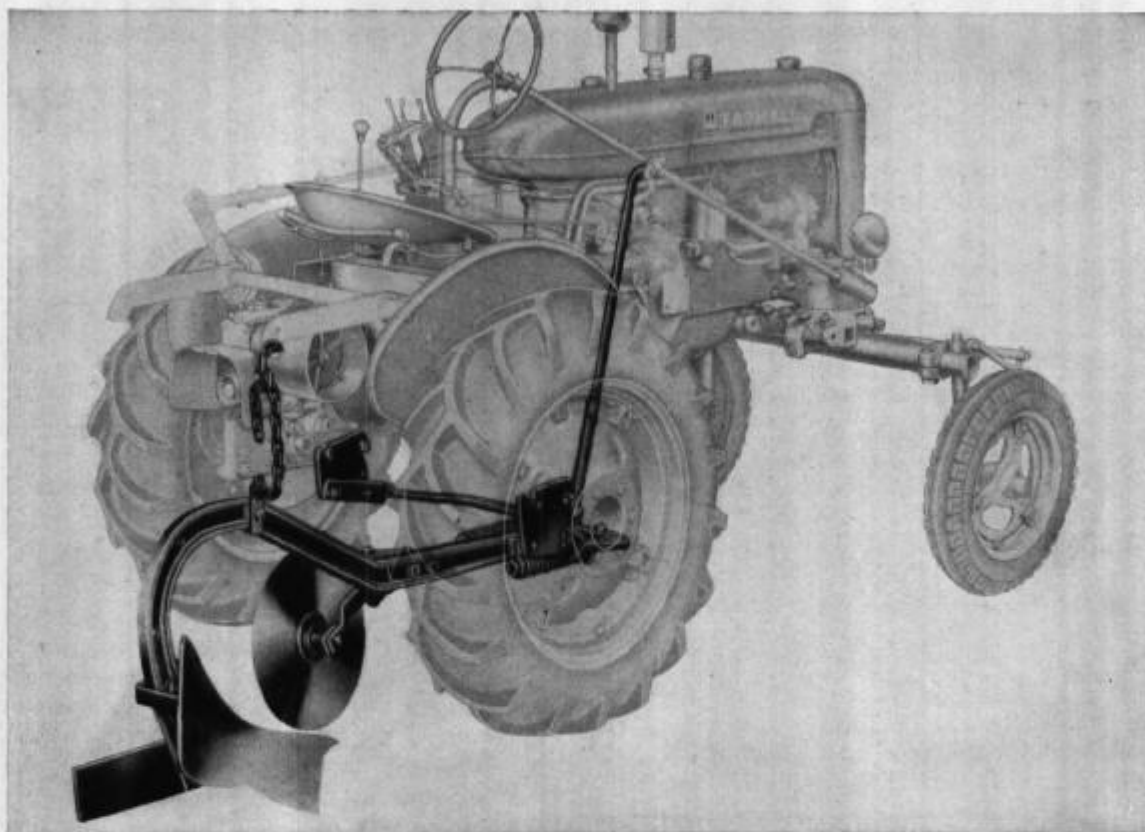
INTERNATIONAL HARVESTER



Farmall Super-A

A-193 and AV-193 Moldboard Plows

One-Furrow One-Way



Illustr. 1 — The A-193 rear-mounted, one-furrow, moldboard plow is shown here with a 16-inch plain rolling colter which is regular equipment.

- Easy to operate.
- Quick-change — easier to hook up than a walking plow.
- Spring-cushioned hitch point safeguards the equipment.
- Wing bearing adjustment is accomplished quickly and easily.
- Farmall Touch-Control for "fingertip touch" lifting and lowering.
- Farmall Touch-Control of the hitch point assures a uniform plowing depth.
- Always a perfect plowing job.

A-193 Moldboard Plow

The A-193 accommodates a single 12, 14, or 16-inch bottom and works as an integral unit with the Farmall Super-A tractor.

AV-193 Moldboard Plow

The AV-193 is designed to accommodate a single 14 or 16-inch bottom and to work as an integral unit with the Farmall Super-AV tractor.

Regular Equipment

One PORC-270 plain blade, 16-inch, R.H. rolling colter. HA, GA, KA, HSKA, SL, MA, BBA, BA, and HSB bottoms in 12, 14, 16-in. sizes, as ordered.

Special Equipment

PORC-298 notched blade, 16-in., R.H. rolling colter; POJT-69 combination jointer, R.H.; POJT-71 steel jointer, R.H.; POJT-271 chilled jointer, R.H.

Specifications

Plow No.	Universal Units Required	No. Furrows	Net Weight (approx.) Bottoms		
			12-in.	14-in.	16-in.
A-193 One-Way	Universal (rigid) Rockshaft	One	191 lb.	202 lb.	204 lb.
AV-193 One-Way			.....	210 lb.	212 lb.



Illustr. 2 — The A-193 plowing unit is shown here as it is regularly listed.



Farmall Super-A
A-193 and AV-193 Moldboard Plows
One-Furrow One-Way (Continued)



Simple, Sturdy Plows

The plow beams on the A-193 and AV-193 are the same except for two parts: the hitch adjusting link and the pick-up chain are longer on the AV-193.

These simple, sturdy plows consist mainly of a beam assembly which includes two cushion springs, one 16-inch plain rolling colter, and a right-hand plow bottom. The plow is pulled by a cushioned hitch from the tractor drawbar with the drawbar extending forward and attached to front Tractor Mounting Pads on the rear axle housing. The plow is raised and lowered by a linkage attached to the left Farmall Touch-Control power arm. Plowing depth is controlled by a linkage from the drawbar to the Farmall Touch-Control power arm on the right-hand side of the tractor.

Universal Rockshaft

For raising and lowering, these plows require the Universal (rigid) Rockshaft (furnished only when ordered). If the purchaser already owns an A-189 one-furrow, two-way moldboard plow or contemplates the purchase of one, he can, by the simple insertion of a bolt, use the Universal (split) Rockshaft wherever the rigid rockshaft is used.

The A-193 and the AV-193 plows are designed for use with tractors using any of the pneumatic tires listed.

Designed for Quick-Change

Attaching the plow to the tractor is simple and easy: (1) Move the drawbar to the free-floating forward position. (2) Attach the linkage from the drawbar to the right-hand power arm on the Farmall Touch-Control mechanism. (3) Back the tractor over the plow. (4) Attach the plow lifting chain to the right hand arm of the Universal Rockshaft. (5) Using Farmall Touch-Control, lift the plow from the ground so that it is free to swing. (6) Attach the plow to the drawbar with the two bolts provided. That's all there is to it.

Easy to Adjust

Plowing depth. The right hand Farmall Touch-Control lever, which is used to regulate the plowing depth, can be set instantly with just the flick of a finger. Not only can quick, accurate adjustments be made at the beginning of the furrow, but also at any point while the operator is traveling down the field.

Wing Bearing. Wing bearing adjustment on the plow is quickly and easily made by turning an eccentric bolt which holds the front of the plow beam to the extension plates. Turning this eccentric bolt tilts the plow beam either right or left. This adjustment need not be changed once it is made for the desired plowing depth.

Spring Cushioned at Hitch Point

The plow is cushioned with two coil springs . . . one on each side of the plow beam. This equal-tension spring-cushion arrangement absorbs shock when obstruc-

tions are encountered in the field. It also permits the plow to run straight as an arrow where the ground is level or slightly rolling. And, when plowing on the contour and throwing the furrows uphill where the ground is loose and has a tendency to break down the furrow wall, it is a simple matter to tighten the outside spring. The tighter spring on the outside decreases the landside pressure and counteracts downhill drift. When throwing furrows downhill, tightening the inside spring counteracts the downhill drift of the plow. This adjustable spring-cushion feature results in a better plowing job.

5 to 7 Acres of Perfect Plowing Per Day

This implement will plow, even to a depth of 8 or 9 inches, as much as 5 to 7 acres a day depending on the width of plow bottom used and condition of the soil. A floating drawbar which is easily and quickly adjusted from the tractor seat with Farmall Touch-Control — an adjustable spring-cushioned hitch point — and an easy-to-adjust eccentric bolt . . . assure a perfect plowing job. The selected depth is always uniform.



Illust. 1 — A-193 plow with the stationary jointer attachment (POJT-71).



Illust. 2 — A-193 plow with the notched colter attachment (PORC-298).



Illust. 3 — A-193 with the notched colter and combination jointer attachments (POJT-69 on PORC-298).



Farmall Super-A

A-189 Moldboard Plows

One-Furrow, Two-Way



- Ideal for plowing on the contour and in small plots.
- No dead furrows or back furrows.
- Easy to operate.
- Quick-change . . . easier to hook up than a walking plow.
- Spring-cushioned at the hitch point safeguards the equipment.
- Wing bearing adjustment is accomplished easily and quickly.
- Farmall Touch-Control for effortless raising.
- Finger-tip latching mechanism for effortless lowering.
- Farmall Touch-Control of the hitch point assures a uniform plowing depth.
- Always a perfect plowing job.

Regular Equipment

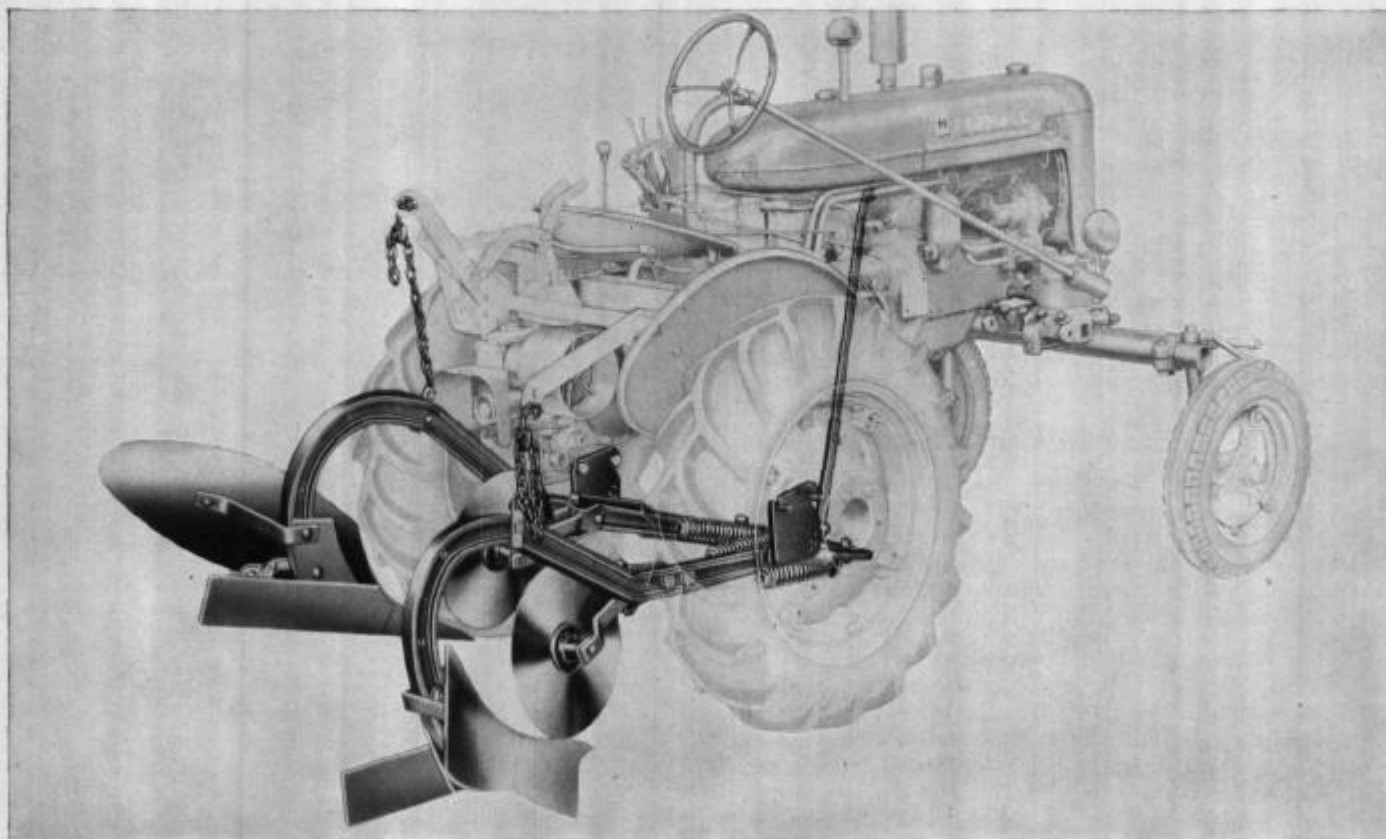
One PORC-270 R.H. plain rolling colter, 16-in.
 One PORC-297 L.H. plain rolling colter, 16-in.
 HA, GA, KA, HSKA, SL, BBA, BA and HSB bottoms in 12, 14 and 16-in. sizes, as ordered.

Special Equipment

PORC-298 R.H. notched rolling colter, 16-in. PORC-271 L.H. notched rolling colter, 16-in. POJT-69 R.H. combination jointer. POJT-169 L.H. combination jointer. POJT-71 R.H. steel jointer. POJT-171 L.H. steel jointer. POJT-271 R.H. chilled jointer. POJT-371 L.H. chilled jointer.

Specifications

Plow No.	Universal Units Required	No. Furrows	Net Weight (Approx.)		
			Bottoms		
			12-in.	14-in.	16-in.
A-189 two-way	Universal (split) Rockshaft	one	396 lb.	418 lb.	422 lb.



Illust. 1 — The A-189 one-furrow, two-way moldboard plow consists of an A-193 plow beam, colter and bottom with the addition of a similar left-hand assembly. The finger-trip latching mechanism holds both bottoms up, or, one bottom up while the other bottom is in the plowing position. The A-189 is ideal for plowing on the contour, for strip-crop farming, and for irrigated fields. All furrows can be turned uphill to form small water-holding terraces. Dead furrows and back furrows are completely eliminated.



Farmall Super-A

A-189 Moldboard Plows

One-Furrow, Two-Way (Continued)



A Simple Two-Way Plow

The A-189 rear mounted, one-furrow, two-way moldboard plow designed to work as an integral unit with the Farmall Super-A tractor, consists of right and left-hand beam assemblies and a finger-trip latching mechanism. Each beam assembly includes two cushion springs, one 16-inch plain rolling colter, and a right or left-hand 12, 14, or 16-inch bottom. The plow is pulled by a spring-cushioned hitch from the tractor drawbar with the drawbar extending forward and attached to the front Tractor Mounting Pads on the tractor rear housing. The plow is raised by a linkage attached to the left Farmall Touch-Control power arm. Plowing depth is controlled by the linkage from the drawbar to the Farmall Touch-Control power arm on the right side of the tractor.

Universal Rockshaft

For raising and lowering, this plow requires the Universal (split) Rockshaft (furnished only when ordered). This unit will work in place of the Universal (rigid) Rockshaft when other machines are used. All that is necessary is to insert a bolt in the holes provided and the Universal (split) Rockshaft can be made rigid see page 7K for complete details.

Finger-trip Latching Mechanism

The finger-trip latching mechanism consists mainly of two latching levers conveniently located to the left of the tractor seat. This mechanism holds both bottoms up, or, one bottom up while the other is in the plowing position. The operator can, quickly and easily, without taking his eyes off the work ahead, drop his hand and select either lever. With just a flick of the fingers, he can drop the plow of his choice to the working position.

Quick-Change

Attaching the plow to the tractor is simple and easy and can be done without lifting. First, move the drawbar to the forward free-floating position. Next, attach the linkage from the drawbar to the right hand Farmall Touch-Control power arm. Now, back the tractor over the plow. Then, attach the plow lifting chains to their respective Universal Rockshaft lifting arms. Using Farmall Touch-Control, lift the plows from the ground so that they are free to swing. Then, attach the plows to the drawbar with the four bolts provided.

Easy to Adjust

Plowing depth. The right-hand Farmall Touch-Control lever is used to regulate the plowing depth. It can be set in an instant. Not only can quick, accurate adjustments be made at the beginning of the furrow, but also at any point while traveling down the field.

Wing bearing. Wing bearing adjustment on the A-189 is made quickly and easily by turning an eccentric bolt which holds the front of the plow beam to the extension plates. Turning this eccentric bolt tilts the plow beam either right or left. This adjustment need not be changed once it is made for the desired plowing depth.

Spring-Cushioned at the Hitch Point

The plows are cushioned with four coil springs . . . one on each side of each plow beam. This equal-tension spring-cushion arrangement absorbs shock when obstructions are encountered in the field. It also permits the plow to run straight as an arrow where the ground is level or slightly rolling. And, when plowing on the contour and *throwing the furrows uphill* where the ground is loose or has a tendency to break down the furrow wall, it is a simple matter to tighten the outside spring. The tighter spring on the outside decreases landside pressure and counteracts downhill drift. When *throwing furrows downhill*, tightening the inside spring counteracts downhill drift of the plow.

5 to 7 Acres of Perfect Plowing a Day

These features assure a perfect plowing job: a finger-trip latching mechanism which permits the operator to drop the proper plow instantly upon entering the field — the floating drawbar hitch point which is easily and quickly adjusted from the tractor seat with Farmall Touch-Control — a spring-cushioned hitch point — and an eccentric bolt for easy adjustment of the wing bearing. The selected depth is always uniform. The furrow is of the proper width — never too wide nor too narrow. The result is a perfect seedbed — and equally important, this implement will plow, even to a depth of 8 or 9 inches, as much as 5 to 7 acres a day, depending on the width of plow bottom used and condition of the soil. The plow fits perfectly into soil conservation practices. It turns all furrow slices in one direction — no dead furrows or back furrows — so important in strip cropping and building and maintaining terraces. Each furrow slice can be turned uphill to form a small water-holding terrace. When plowing irrigated fields this type of plow is a necessity to obtain level terrain.



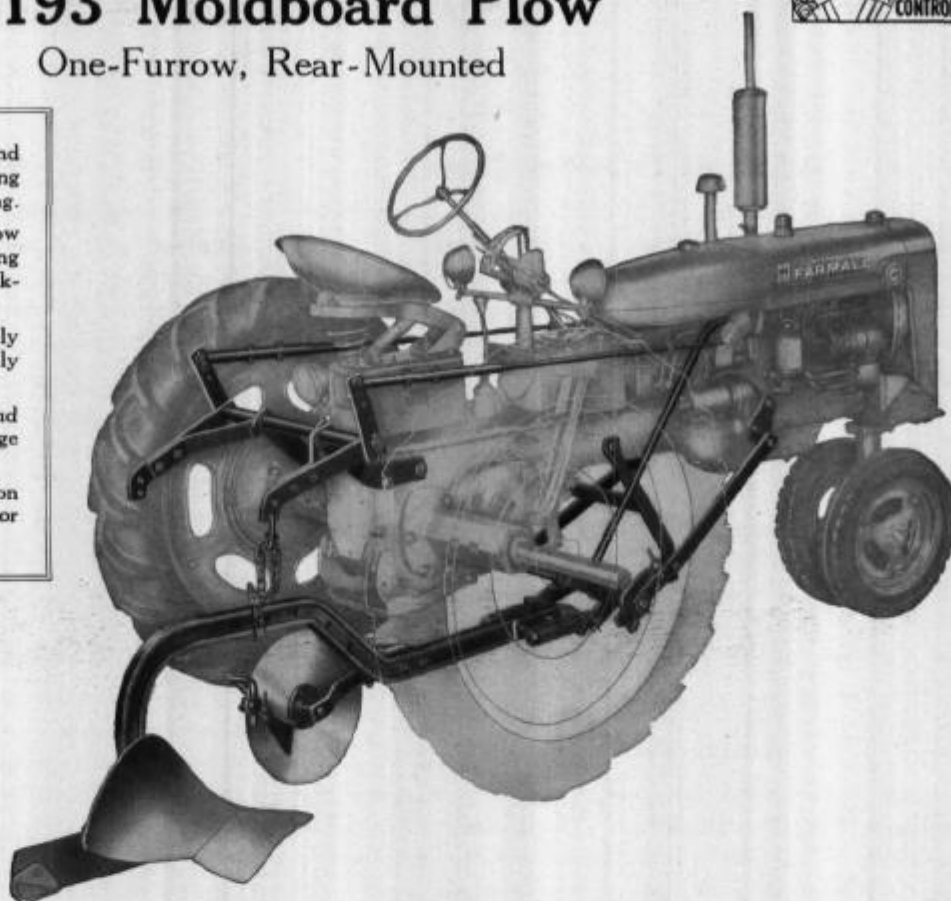
Farmall C

C-193 Moldboard Plow

One-Furrow, Rear-Mounted



- **Farmall Touch Control** — Raises and lowers bottoms and regulates plowing depth. Provides easier, faster plowing.
- **Simple, Sturdy Unit Design** — Plow comprises only basic essential working parts for maximum economy and working efficiency.
- **Direct-Connected** — Makes a highly maneuverable plowing outfit. Easily backed. Convenient to transport.
- **Quick-Change** — Easily attached and detached, permitting quick interchange with other implements.
- **Choice of Bottoms** — Wide selection of bottoms for every type soil, in 14 or 16-inch sizes.



Illust. 1 — C-193 one-furrow plow equipped with long landside 14-inch bottom, plain blade rolling colter, and combination jointer attachment.

The C-193 is a single-furrow, one-way, direct-connected plow designed for the Farmall C tractor. It consists of a hitch frame, a plow beam with bottom and rolling colter, and a rear rockshaft.

This plow is suitable for all general plowing conditions within the power scope of the tractor. Being direct-connected, the plow is easily maneuvered in small, irregular-shaped fields, in "tight" spots such as fence corners or along fence rows, and when plowing "on the contour."

The plow unit consists of a single beam assembly with either a 14 or 16-inch bottom, as ordered, and plain rolling colter. Two cushion springs are provided at the front end of the beam. These springs absorb the shock

when obstructions are encountered in the field, thereby protecting both plow and tractor. The springs also provide a means for correcting plow "drift" and can be adjusted to compensate for excessive landside pressure in contour plowing when throwing furrows uphill.

The plow is equipped with a convenient eccentric adjustment for tilting the beam so as to maintain the correct share wing bearing at different plowing depths. One of the Touch-Control power arms is connected to the plow hitch point so it can be raised or lowered instantly from the tractor seat to control the plowing depth. Raising and lowering of the plow bottom likewise is controlled by a Touch-Control lever.

Regular Equipment

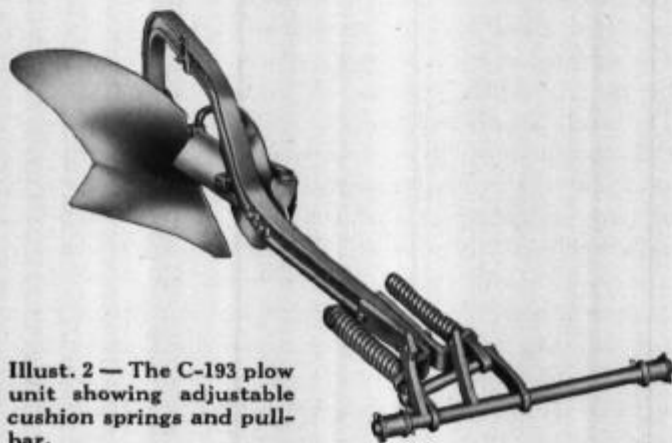
One HA, KA, HSKA, GA, SL, BBA, BA, or HSB bottom (with long landside) in 14 or 16-inch size, as ordered (refer to pages 81 and 82 for details). Plain blade 16-inch rolling colter. Hitch frame and rear rockshaft.

Special Equipment

Notched blade 16-inch rolling colter. Combination jointer (for use with rolling colters). Stationary jointers. Rear furrow wheel attachment. Bottoms, as listed under Regular Equipment but with short landside (required when rear furrow wheel attachment is used). Stationary type gauge wheel (steel or pneumatic tire). Touch-Control type gauge wheel (steel or pneumatic tire).

Specifications

Plow	Net Weight (Approx.)	
	14 in.	16 in.
C-193 One-furrow	250 lb.	254 lb.



Illust. 2 — The C-193 plow unit showing adjustable cushion springs and pull-bar.



Farmall C

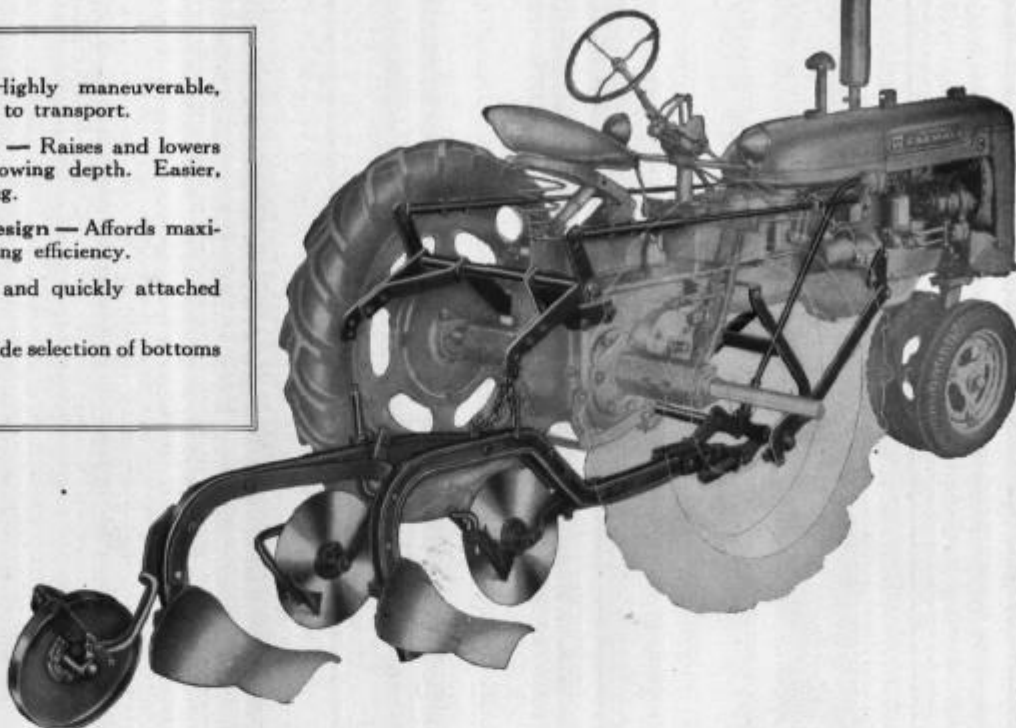
C-294 Moldboard Plow

Two-Furrow, Rear-Mounted



- **Direct-Connected** — Highly maneuverable, easily backed, convenient to transport.
- **Farmall Touch-Control** — Raises and lowers bottoms and regulates plowing depth. Easier, faster, and better plowing.
- **Simple, Sturdy Unit Design** — Affords maximum economy and working efficiency.
- **Quick-Change** — Easily and quickly attached and detached.
- **Choice of Bottoms** — Wide selection of bottoms for every type soil.

Illust. 1 — The C-294 two-furrow plow, shown equipped with combination jointers and rear wheel attachment.



The C-294 is a 2-furrow direct-connected plow, with hitch frame and rockshaft units, for use with the Farmall C tractor.

The C-294 is suitable for light soils and plowing conditions where a 2-furrow plow is desired. It is easily maneuvered in small, irregular-shaped fields and can be backed readily into fence corners or operated along fence rows and on curves. It is also a good plow for high-speed work on the straightaway.

The plow unit consists of a beam assembly which includes one long and one offset beam with 12 or 14-inch bottoms and plain rolling colters. The rear bottom is regularly equipped with long landside and the front bottom with short landside. The plowing depth is controlled from the tractor seat by one of the Touch-Control levers. A rear furrow wheel attachment or one of the gauge wheel attachments described on page 63-H can be obtained to control the rear of the plow in adverse soil conditions.

Two cushion springs provide protection for the plow

when obstructions are encountered in the field. These springs are also adjustable to control the "drift" of the plow and relieve excessive landside pressure in contour plowing when throwing furrows uphill. A convenient eccentric adjustment permits tilting the beams so as to maintain the correct share wing bearing at different depths of plowing. Raising and lowering of the bottoms is controlled by Touch-Control.

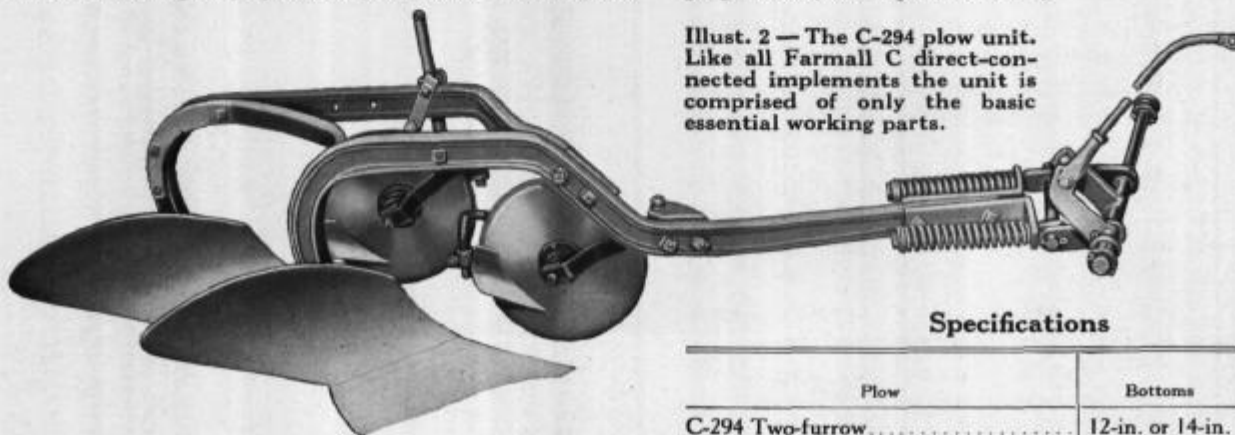
Regular Equipment

One front (short landside) and one rear (long landside) bottom, 12 or 14-inch—Type HA, KA, HSKA, GA, SL, BBA, BA, or HSB, as ordered (see pages 81 and 82). Plain blade 16-inch rolling colter. Hitch frame and rear rockshaft.

Special Equipment

Notched blade 16-inch rolling colter. Stationary jointer. Combination jointer (for use with rolling colters). Rear furrow wheel attachment—(requires use of short landside bottom). Stationary type gauge wheel (steel or pneumatic tire). Touch-Control type gauge wheel (steel or pneumatic tire).

Illust. 2 — The C-294 plow unit. Like all Farmall C direct-connected implements the unit is comprised of only the basic essential working parts.



Specifications

Plow	Bottoms	Net Weight (Approx.)
C-294 Two-furrow	12-in. or 14-in.	421 lb.



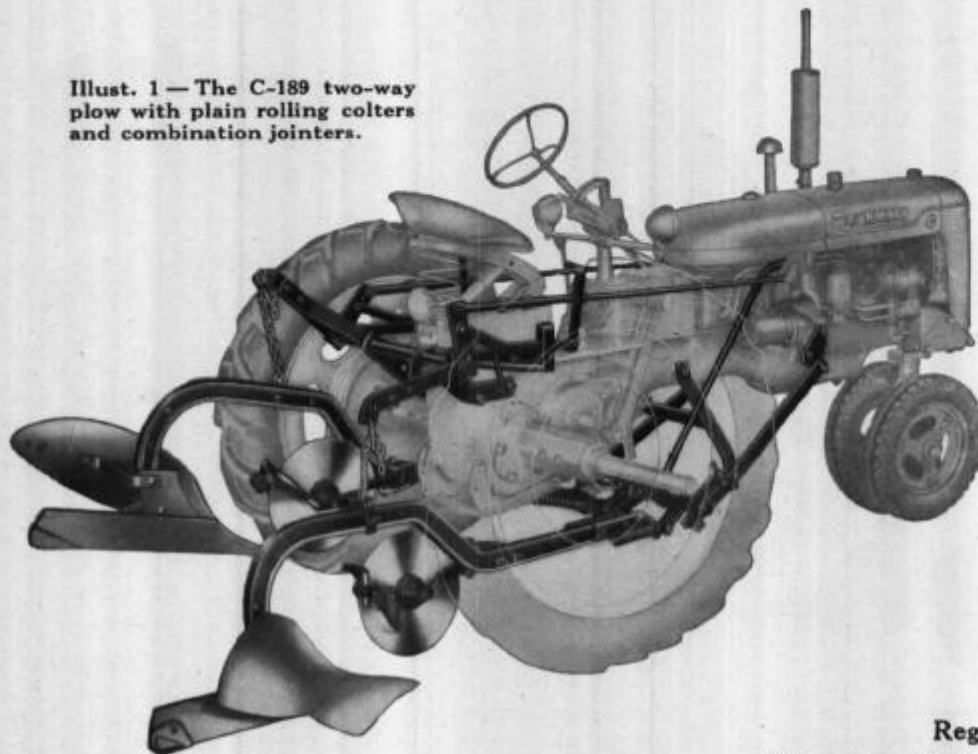
Farmall C

C-189 Two-Way Moldboard Plow

One-Furrow, Rear-Mounted



Illust. 1 — The C-189 two-way plow with plain rolling colters and combination jointers.



- **Farmall Touch-Control** — Raises and lowers bottoms and regulates plowing depth. Easier, faster, and better plowing.
- **Direct-Connected** — Highly maneuverable, easily transported.
- **Simple, Sturdy, Unit Design** — For utmost economy and efficiency.
- **Quick - Change** — Easily attached and detached.
- **Two-Way Plow** — Turns furrows in one direction, eliminating dead and back furrows.
- **Choice of Bottoms** — Wide selection of bottoms for every type soil, in 14 or 16-inch sizes.

Regular Equipment

Bottoms (one right-hand and one left-hand)—HA, KA, HSKA, GA, SL, BBA, BA, or HSB in 14 or 16-inch, as ordered (See pages 81 and 82). Plain blade 16-inch rolling colters. Hitch frame and rear rockshaft.

Special Equipment

Rolling colters with notched blades. Combination jointers, right and left-hand (for use with rolling colters). Stationary jointers.

Rear furrow wheel attachment (requires use of short landside bottoms). Stationary type gauge wheels (steel or pneumatic tires). Touch-Control type gauge wheels (steel or pneumatic tires).

Specifications

Plow	Net Weight (Approx.)	
	14-in.	16-in.
C-189 Two-Way	525 lb.	534 lb.

The C-189 two-way plow is a highly efficient, economical outfit for plowing hilly or rolling fields, irrigated lands, and wherever it is desirable to turn furrows all one way and eliminate dead and back furrows. The plow unit consists of right and left-hand beam assemblies and latching mechanism. Each beam assembly includes two cushion springs, one 16-inch plain rolling colter and a 14 or 16-inch bottom — right or left-hand. The latching mechanism consists of two levers, one located on each side of the operator. To drop the right-hand bottom, the right-hand latching lever is tripped, and vice versa. The plowing depth is controlled by lowering or raising the plow pull bar with one of the Touch-Control levers.

The rear rockshaft, which controls the raising of the bottoms, is provided with two individual lift arms to permit raising or lowering either one of the beam assemblies independently of the other. Each lift arm is connected by an adjustable rod to one of the Touch-Control power arms. The plow hitch frame provides a means for quick-attaching the plow.

The C-189 plow has the same cushion-spring arrangement for protecting the plow against hidden obstructions and the same type of eccentric adjustment for tilting the beams as described under the one and two-furrow Farmall C plows.



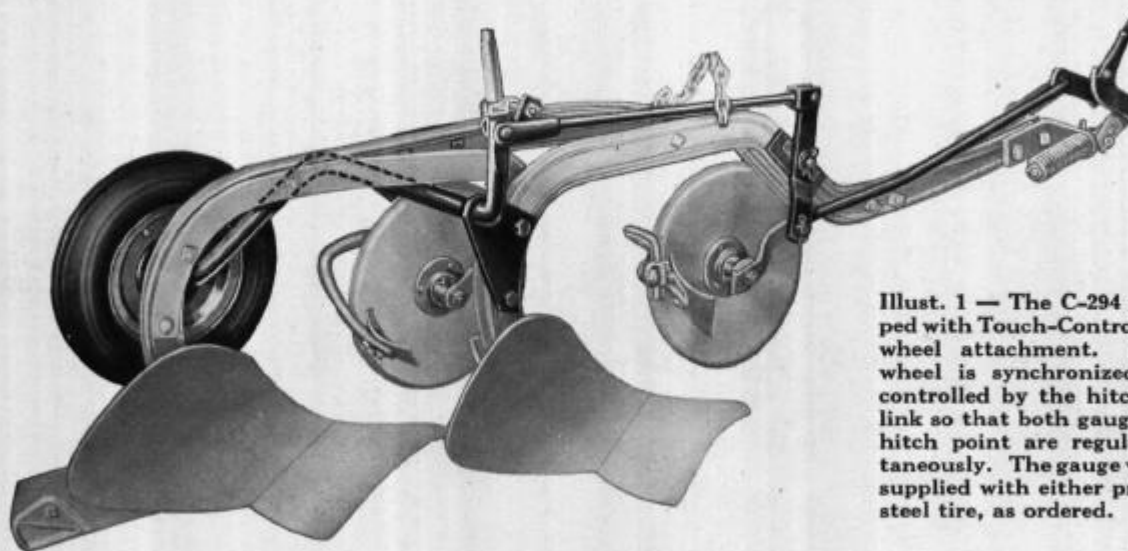
Illust. 2 — The C-189 plow unit. Note the cushion springs which absorb shocks. They are also adjustable to control the plow "drift."



Farmall C

Rear-Mounted Moldboard Plows

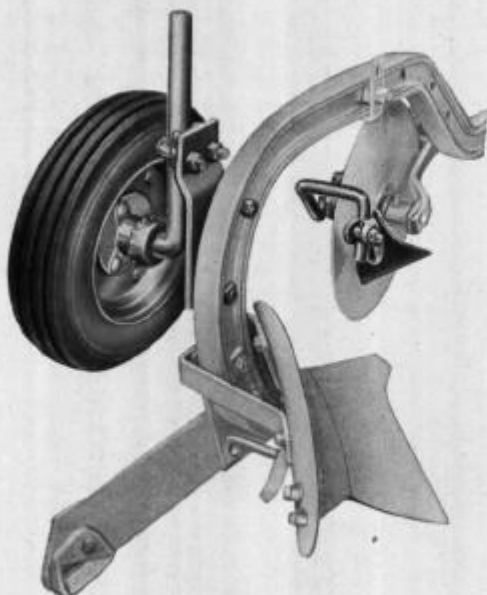
Special Equipment



Illust. 1 — The C-294 plow equipped with Touch-Control type gauge wheel attachment. This gauge wheel is synchronized with and controlled by the hitch adjusting link so that both gauge wheel and hitch point are regulated simultaneously. The gauge wheel can be supplied with either pneumatic or steel tire, as ordered.

Under normal plowing conditions the plowing depth of Farmall C moldboard plows is fully regulated by adjusting the hitch point up or down by means of the Touch-Control lever. In extremely difficult plowing conditions, however, it is sometimes desirable to control the rear end of the plow by means of gauge wheels or a rear furrow wheel attachment. Two types of gauge wheels are available for this purpose — the stationary type (see Illusts. 2 and 3) which requires individual adjustment independent of the hitch point, and the

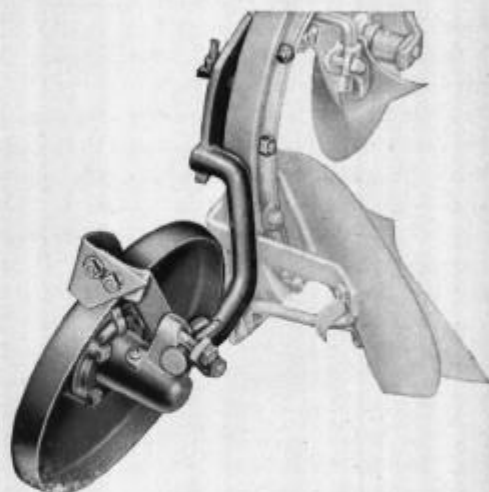
Touch-Control type gauge wheel (Illust. 1) the setting of which is synchronized with the hitch point so that both the plow hitch and the gauge wheel are controlled simultaneously by the Touch-Control lever from the tractor seat. Both the stationary and the Touch-Control type of gauge wheel are available with steel or pneumatic tire, as ordered. The rear furrow wheel attachment (Illust. 4) is available with steel tire only and can be used only with short landside bottoms.



Illust. 2 — Stationary type gauge wheel attachment with pneumatic tire. Note also the combination jointer which is furnished as special equipment for the plow. For information on Jointers, see page 83.



Illust. 3 — Stationary type gauge wheel with steel tire. Gauge wheels run on the unplowed land close to the furrow wall and assure uniform plowing depth.

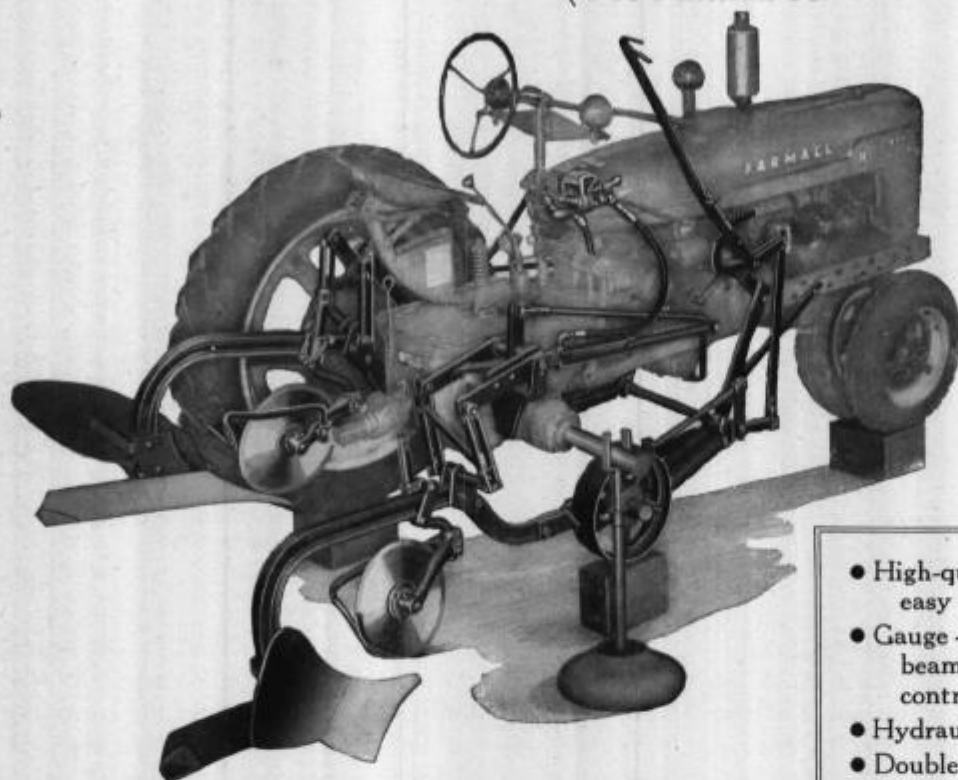


Illust. 4 — The rear furrow wheel attachment (supplied with steel tire only) is attached to the beam and runs in the furrow back of the plow bottom. It can be used only with short landside plow bottoms (regular front bottom). The rear furrow wheel tends to steady the plow and makes possible a straighter furrow, especially in root-infested soils.



H-186 and H-190 1-Furrow Moldboard Plows

(For Farmall H)



Illust. 1 — The H-186 one-furrow, two-way plow for Farmall-H equipped with selective-lift hydraulic Lift-All. (Right tractor wheel removed to show plow details.)

- High-quality, 1-way and 2-way plows for easy maneuvering in any field.
- Gauge-wheel controlled, full-floating beams . . . accurate, uniform depth control under all conditions.
- Hydraulic Lift-All for fast, easy operation.
- Double-spring cushion hitch to protect both plow and tractor.

Here are compact, high-quality one-furrow plows for fast, easy handling in any field. Because they are carried entirely on the tractor they can be backed and turned much more easily than conventional trailing plows. Where the fields are small or irregular in shape, these plows make it possible to utilize a maximum of ground by backing into corners and working close to fence rows and ditches. They know no equal for maneuverability in fields infested with stumps, large rocks, ditches and pond holes. They are ideal for farming on the contour and for building terraces.

The H-186 is the two-way plow with a full length, I-section beam for each bottom. It is ideal for hillside work, irrigated lands and any field where dead furrows and back furrows must be avoided. The H-190 is the one-way and is of identical construction except that it has only the right-hand bottom. It is well liked by farmers who have only a limited amount of plowing to do and want a sturdily constructed plow that is easy to maneuver in tight places. It also meets the requirements of farmers who have difficult soil conditions where a two-furrow plow is not suitable.

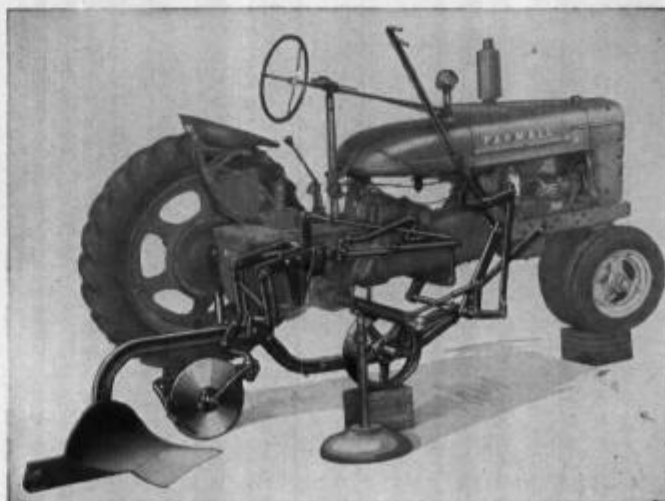
The plows have full-floating beams, suspended at the rear by parallel links which permit the bottoms to freely float up and down and allow ample movement from side to side for easy steering of the tractor.

Specifications

Plow	Net Weight (Approx.) — Lb.		
	14-in.	16-in.	18-in.
H-186 two-way	885	891	913
H-190 one-way	465	468	481

Front-End Depth Control

An outstanding feature of these plows is the hitch, which holds the plow to uniform depth regardless of ground irregularities encountered either ahead of the plow or under the wheels of the tractor. The plow is set to the desired depth by means of the depth control lever which, through parallel linkage at the front end of the beam, regulates the tilt of the cranked axle of the gauge wheel.



Illust. 2 — The one-way H-190 has the same design as the H-186 except that it has no left-hand bottom.



H-186 and H-190 1-Furrow Moldboard Plows

(Continued)

Gauge Wheel Assures Uniform Depth

As the tractor moves forward, the plow bottom seeks its level in accordance with the height of the front end of the beam. If the gauge wheel encounters a high spot (or if one of the tractor wheels drops into a low area), the rear upright of the parallel linkage is raised, thereby lifting the front end of the beam; the bottom "noses up" momentarily, leveling out immediately to a shallower depth. A similar automatic adjustment takes place when the gauge wheel encounters a low spot.

Each beam has individual, double-cushion springs which protect both plow and tractor when the bottom strikes a hidden rock, root or other obstruction. Both plows come equipped for operation with hydraulic Lift-All. Selective-type cylinder control is used with the H-186.

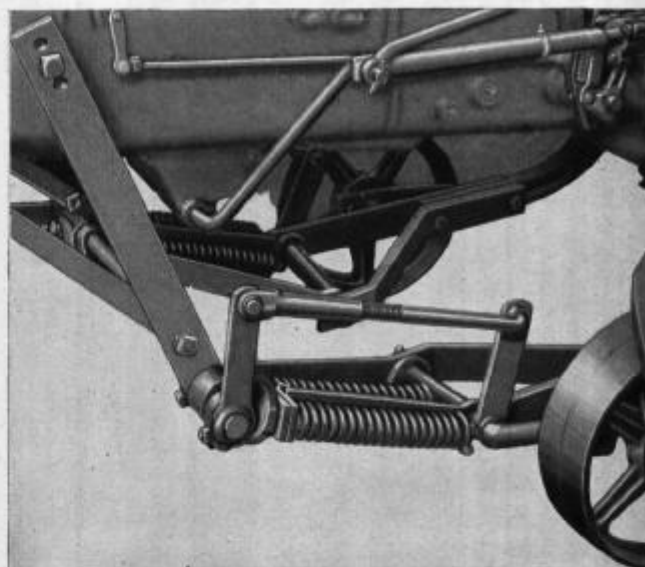
See also pages on Plow Bottoms and Accessories

Regular Equipment

For operation only with hydraulic Lift-All; H-186 with selective lift. Cushion spring hitch. BBA, GA, HA, HSKA, KA or SL bottoms in 14, 16 or 18-in. sizes, as ordered. Combination 16-in. plain-blade rolling colters and jointers.

Special Equipment

Combination rolling colters and jointers with notched-blade colters in 16 or 18-in., or plain-blade colters in 16-in. Rolling colters less jointer in 16 or 18-in. plain or notched blade. Stationary jointers in steel or chilled. Combination-type steel jointers.



Illust. 1—Front end of left-hand beam on H-186, showing gauge wheel. Adjustment is provided on the parallel link to permit setting depth levers within convenient reach of the operator.



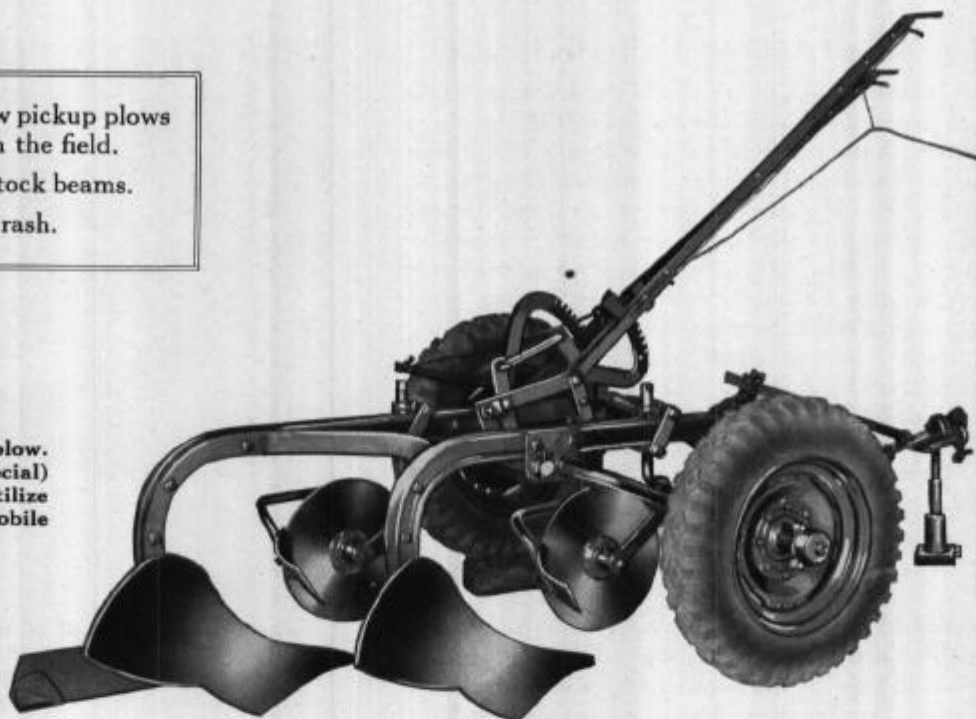
Illust. 2, (above)—The one-way H-190 has the same construction as the H-186. The gauge wheel accurately controls plowing depth.

Illust. 3, (left)—Rear view of the H-186. Parallel linkage stabilizes the bottoms, yet allows sufficient side-to-side motion to assure easy steering of the tractor.

Nos. 3 and 4 Moldboard Plows

- Quality 1 and 2-furrow pickup plows for easy handling in the field.
- Full-length channel-stock beams.
- Ample clearance for trash.

Illust. 1 — The No. 4 plow. Pneumatic-tire wheels (special) make it possible to utilize old, standard-size automobile tires.



The Nos. 3 and 4 plows are compact, 1- and 2-furrow pickup plows, designed to do a workmanlike job under average conditions. They turn easily in small fields and back up nicely for work in tight spots. There are 22 inches of clearance under the beam and 20 inches, fore and aft, between the bottoms. The land and furrow wheels have separate axles. When at work, the furrow wheel runs well ahead of the bottom, leaving ample clearance for trash.

Beams on both plows are made of heat-treated plow-beam channel stock. The beams are of full length and the front ends are dropped to bring the hitch point within the true line of draft.

The frame of the No. 3 consists of the beam and a heavy flat-steel bar directly joined in the rear and connected at the front by a heavy steel spreader. The two channel-stock plow beams of the No. 4 are connected both front and rear by spreaders of similar type.

The hitch is of the pickup type. It is flexible with reference to the up-and-down motion of the rear end of the tractor as it passes over rough ground. When the plow is raised at the end of the furrow, a stop on the hitch-raising link holds the front end of the plow down so that the plow is carried well off the ground.

Adjustable hitch plates enable the plowman to obtain

the ideal adjustment for the depth he wants to plow, and a 3-piece triangular hitch provides ample adjustment sidewise to adapt the plow to varying conditions and to the rear-wheel tread of the tractor. The power lift is of simple, durable design.

A long landside on the bottom of the No. 3 and on the rear bottom of the No. 4 assures a steady-running plow under varying conditions. The landside has a replaceable chilled heel casting.

A rear wheel attachment, for use where it is necessary to counteract sidedraft, can be supplied on special order.

See also pages on *Plow Bottoms and Accessories*.

Regular Equipment

BA, BBA, GA, GAA, HA, HSKA, KA, MA, N, or SL bottoms; sizes as shown in Specifications. Long landside on No. 3 and on rear bottom of No. 4. Combination rolling colter and jointer with 16-in. plain blade. Steel wheels with 3-in. tires. POTH-173 spring release hitch (hinge-type draft hook).

Special Equipment

Ground tools: Combination rolling colter and jointer with 18-in. plain blade or with 16-in. or 18-in. notched blade. Rolling colter less jointer in 16-in. or 18-in. and plain or notched. Stationary jointer.

Wheels and hitches: Pneumatic wheels for 6.00 x 16 or 6.50 x 16-in. tires less tires and tubes. Steel wheels with 6-in. tires. POTH-179 spring release hitch (with handle and overcenter draft hook). Rear wheel attachment.

Specifications

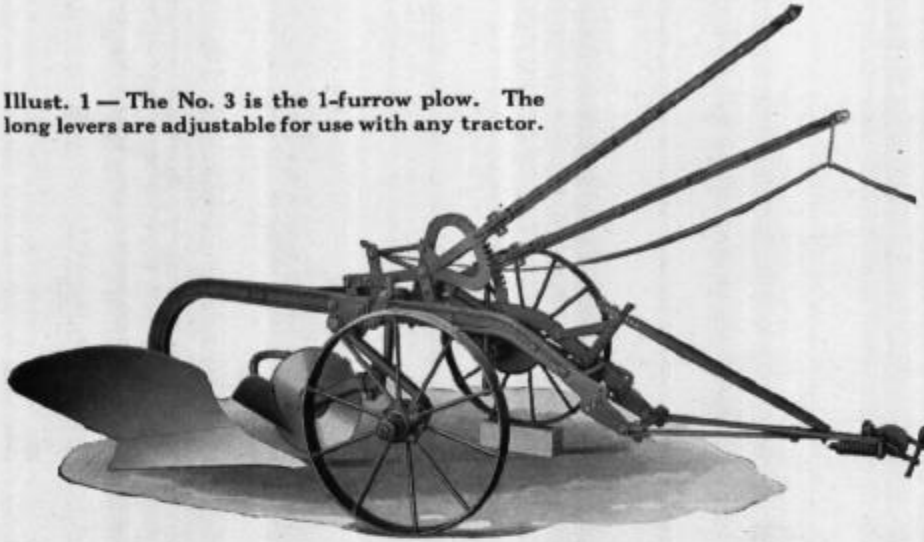
No.	No. Bottoms	Net Weight (Approx.)—Lb.			
		10-in.	12-in.	14-in.	16-in.
3	1	443	443
4	2	550	556	561	...



Nos. 3 and 4 Moldboard Plows

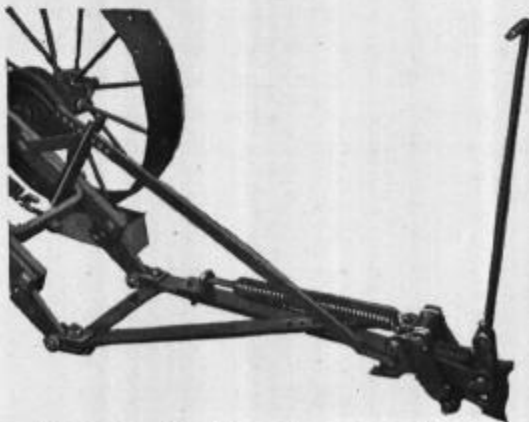
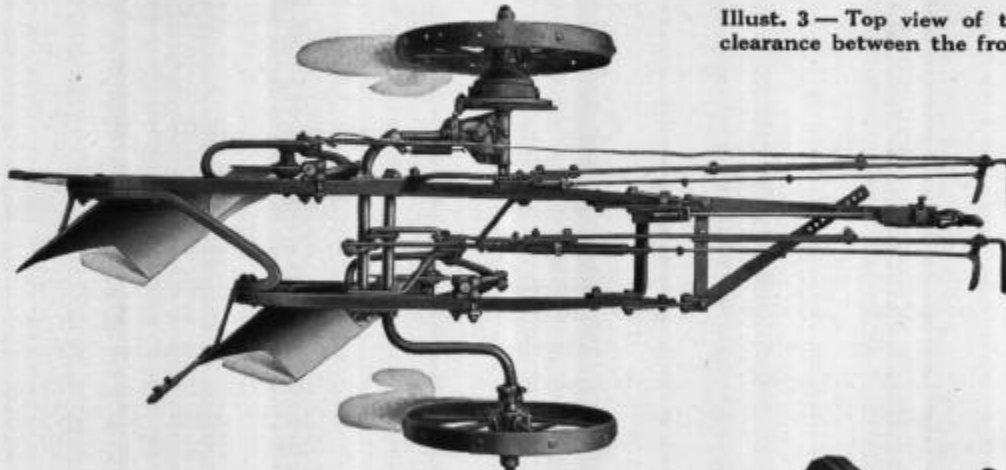
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Illust. 1 — The No. 3 is the 1-furrow plow. The long levers are adjustable for use with any tractor.

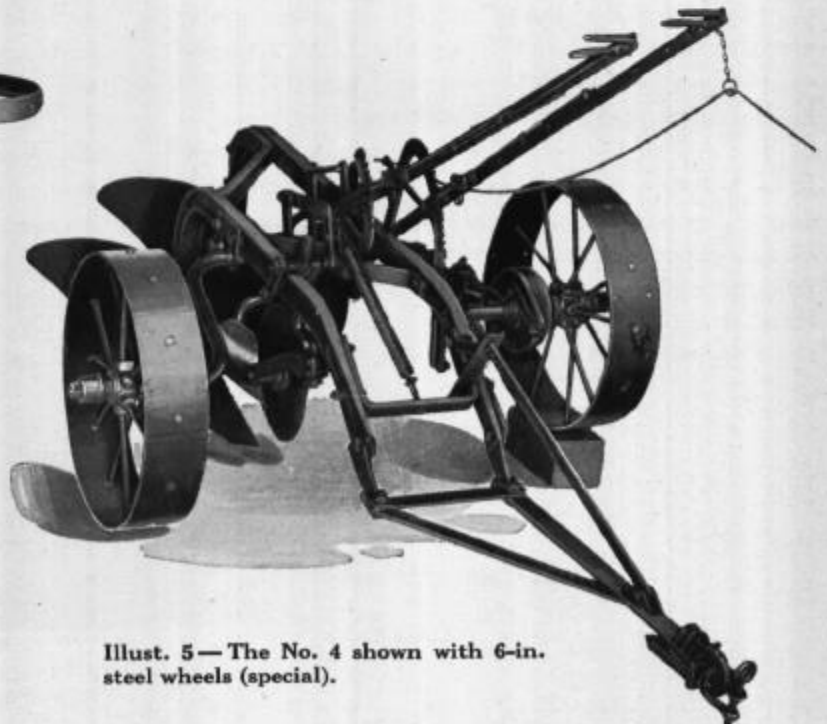


Illust. 2 — Rear wheel attachment. Bottoms with shorter landsides must be ordered when the plow is equipped with this attachment.

Illust. 3 — Top view of the No. 4 plow. There is ample clearance between the front bottom and the furrow wheel.



Illust. 4 — Special spring release hitch, POTH-179. Swinging the handle opens the retaining hook — there's no need to get off the tractor to recouple the plow.



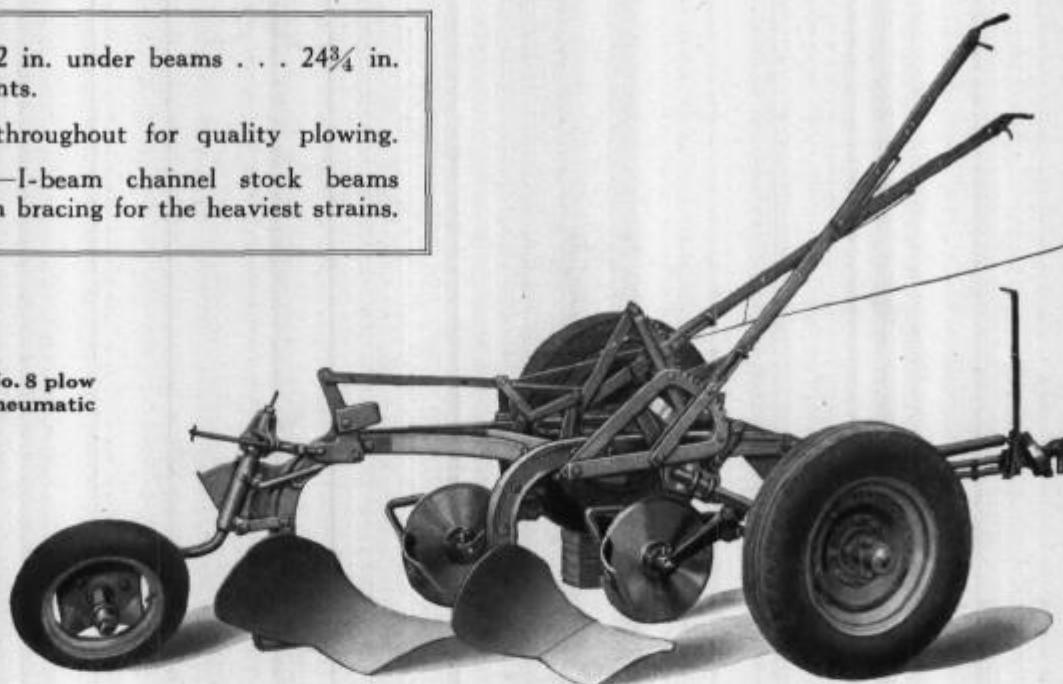
Illust. 5 — The No. 4 shown with 6-in. steel wheels (special).



No. 8 Moldboard Plows

- Ample clearance—22 in. under beams . . . 24 $\frac{3}{4}$ in. between share points.
- Easy adjustments throughout for quality plowing.
- Rigid construction—I-beam channel stock beams . . . between-beam bracing for the heaviest strains.

Illust. 1 — The 2-furrow No. 8 plow equipped with wheels for pneumatic tires (tires not supplied).



The No. 8 tractor plow is for the farm where conditions range from those of light spring plowing to the hardest kind of fall plowing. It is an excellent plow where the desired depth is up to 9 or 10 inches. Bottoms are spaced 24 $\frac{3}{4}$ in. from one share point to the next in order to give ample clearance in turning over and thoroughly covering heavy growths of stalks, weeds, or green manure crops. It is sturdily built throughout, easy to handle in any field, and easily adjusted to do the kind of work that particular plowmen like.

The 1 and 2-furrow plows, which can be had with 18-in. bottoms, are excellent for working in broomcorn, sweet clover stubble, and other difficult conditions where exceptionally good coverage and unusual clearance are required. They will plow as deep as 10 inches and lay a clean, wide furrow. They are especially popular in territories where the corn borer has been troublesome.

Easy Adjustments for Quality Work

All necessary adjustments are provided and they are so simple that it is easy to do good work. The levers are conveniently located and assisted by counterbalancing springs to make it easy to adjust the depth and to level the plow. The two-piece handles are adjustable to the desired length for various tractors. Quadrants and detents are of steel to assure quick, accurate setting. The hitch is easily set for work with any tractor.

The rear furrow wheel locks firmly in position when the plow is at work, yet casters naturally when turning at the headlands. It is easy to adjust both for raising or lowering the rear of the plow, and for regulating the pressure of the rear landside against the furrow wall. The pan-type wheel regularly furnished does not hold trash.

The steel wheels with which the plows are regularly equipped have spokes cast into the hubs and hot-riveted

Specifications

No. Bottoms	Net Weight, (Approx.) — Lb.				
	10-in.	12-in.	14-in.	16-in.	18-in.
1	.....	.....	.....	.....	716
2	822	873	899	909	946
3	1041	1123	1164	1175	.....
*3-L	.....	.....	1294	.....	.....
4	.....	1484	1551	1581	.....
3-Rice	.....	1251	1301	.....	.....

*No. 8-L has 3 long beams instead of 2 straight beams and 1 offset beam.



No. 8 Plows

(Continued)

into the tires. The wheel boxes are replaceable and the long-wearing wheel bearings have pressure-gun lubrication fittings. Axles are of high-carbon steel, heat-treated to add at least 50 percent to the normal strength of untreated steel.

Rigid Frame Construction

The beams are of heavy I-beam steel. The between-beam braces extend well down around the throats of the beams, adding strength to the points subject to the heaviest plowing strains. On the 3 and 4-furrow plows there is a heavy tie bar across the rear ends of the beams. Beams and axles are heat-treated to provide strength against all emergencies.

On the No. 8 the foot is straight with the body of the beam so that it meets the thrust of the bottom squarely. The foot is accurately forged to make a perfect fit with the plow bottom, which is attached to the beam by three bolts; the lower bolt is heat-treated to prevent it from kinking or bending under strain.

Spring Release Hitch

All No. 8 plows are equipped with a spring release hitch which automatically uncouples the plow from the tractor when the plow encounters a stone, root, or other obstacle which would otherwise damage the plow.

The hitch is provided with a handle so that when the plow has been released from the tractor, it is easy to back the tractor to the plow, raise the hitch, and recouple. The plow can then either be raised to pass over the obstacle or backed far enough for the operator to remove the obstruction and proceed with the plowing without leaving a skip.

Special Riceland Plows

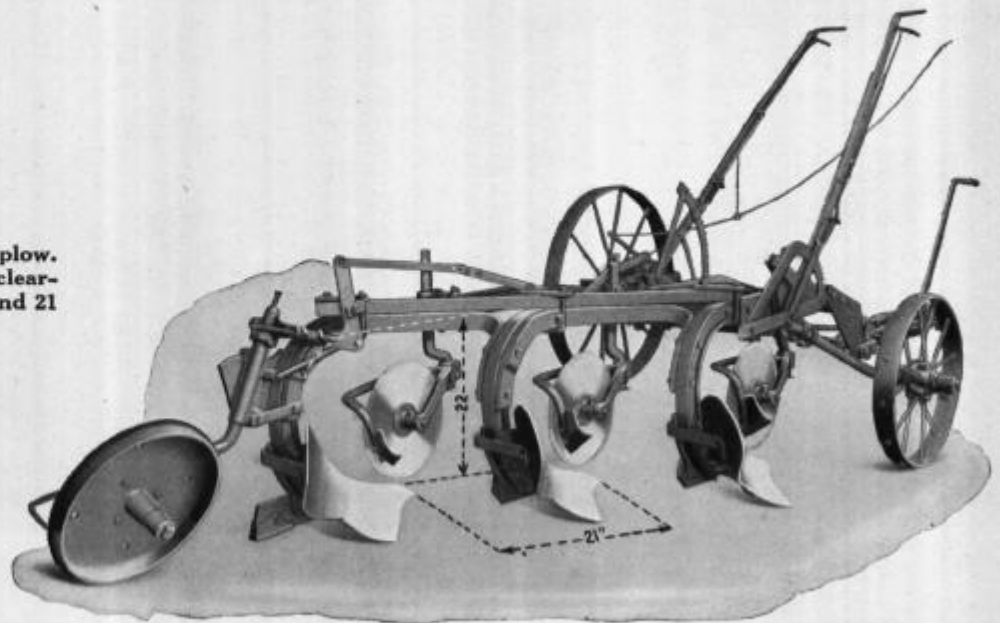
A special combination of equipment can be supplied for plowing rice fields. It includes wheels with extra-wide rims (7-in. land and furrow wheels and 3-in. rear furrow wheel); lugs on the land wheel to assure the operation of the power-lift device in wet ground; and plain colters with special large-throated yokes to prevent clogging.

See also pages on Plow Bottoms and Accessories.

Regular Equipment

BA, BBA, GA, GAA, HA, HSKA, KA, MA, MC, N, SL, UA or UAT bottoms as ordered; sizes as shown in Specifications. Combination rolling colters and jointers with 16-in. plain blades. Steel 3-in. land and front furrow wheels on 2 and 3-furrow 10-in. plow; 4-in. on all others except Riceland (see above). Pan-type steel rear wheel. Spring release hitch with handle (single-spring for 1, 2 and 3-furrow; double-spring for 4-furrow).

Illust. 1 — The 3-furrow No. 8 plow. Note the ample beam and bottom clearance—22 inches under the beam and 21 inches fore and aft.



No. 8 Plows

(Continued)

Special Equipment

Combination rolling colters and jointers with 18-in. plain blades, and 16 or 18-in. notched blades. Rolling colters (less jointers) in 16 or 18-in., and plain or notched. Stationary jointers in chilled or steel. 24-in. notched colter for 1-furrow 18-in. plows. Trash (broomcorn) springs for 2 and 3-furrow plows. Weed hooks. Hanging cutters.

7-in. land and furrow wheels for 2 and 3-furrow, 4-in. land and furrow wheels for 2 and 3-furrow 10-in. plows. Land wheel for 7.00 x 16 or 7.50 x 16 pneumatic

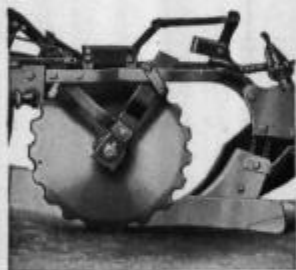
tires (less tire); furrow wheel for 5.50 x 16 or 6.00 x 16 pneumatic tires (less tire).

Heavy-duty steel rear wheel. Pneumatic rear wheel with 3.50 x 12, 4-ply implement tire.

Spring release for use with crawler type tractors (no handle). Spring release with closed-type draft hook for 2 and 3-furrow except 18-in.

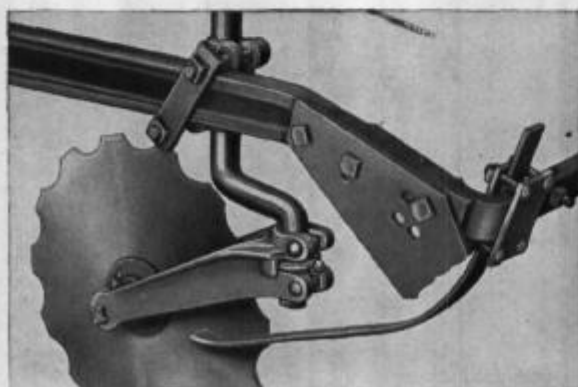
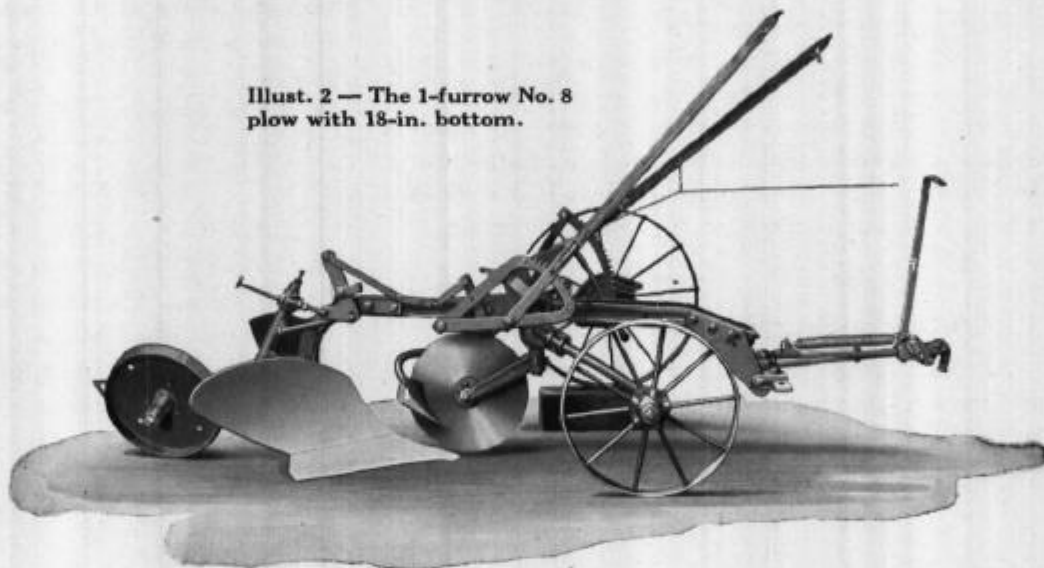
No. 46 plowsole fertilizer attachment for 2-furrow plows.

Riceland Plow Equipment: KA-5 or MA-5 bottoms. 18-in. rolling colters. 7-in. land and front furrow wheels and 3-in. rear furrow wheel. Gauge wheel with 6-in. face.

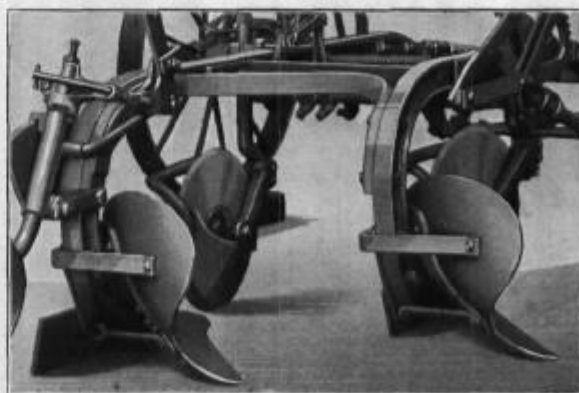


Illust. 1 — The 24-in. notched rolling colter, which can be supplied for the 1-furrow No. 8 plow with 18-in. bottom.

Illust. 2 — The 1-furrow No. 8 plow with 18-in. bottom.



Illust. 3 — Trash spring for holding down heavy stalks such as corn, or broomcorn. This is the No. 5 spring. The No. 6 has clamps for attaching to the side of the second and third beams.

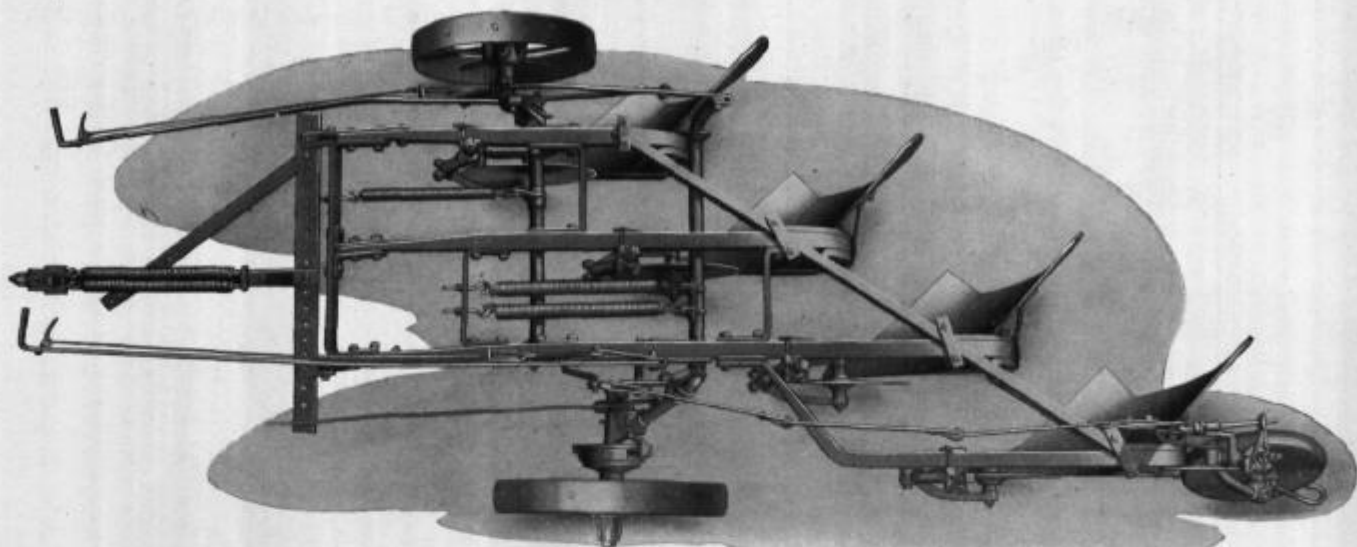


Illust. 4 — Close-up showing the remarkable clearance of the 18-in. No. 8 plow.



No. 8 Plows

(Continued)



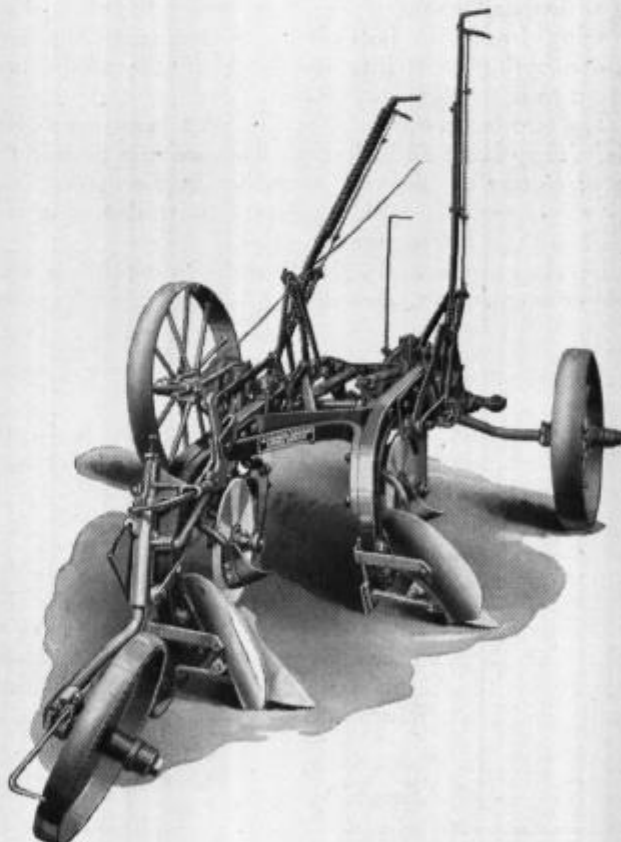
Illust. 1 (above) — Top view of the 4-furrow No. 8 plow. The heavy tiebar across the rear end of the beams comes on the 3 and 4-furrow plows.



Illust. 2 — A 3-furrow No. 8 plow with the frame stripped to show the sturdy construction and the heavy counterbalancing springs on the land and furrow axles. The No. 8-L 3-furrow plow has three long beams in place of two straight beams and one offset beam.



Illust. 3 — One pull on the trip rope sets the clutch into action, and the bottoms are quickly raised. A second pull on the same rope releases the bottoms, which quickly reach their full plowing depth. Parts are enclosed in a practically dustproof housing. A hard steel wear washer greatly increases the life of the clutch. Pressure fittings provide the best possible lubrication.



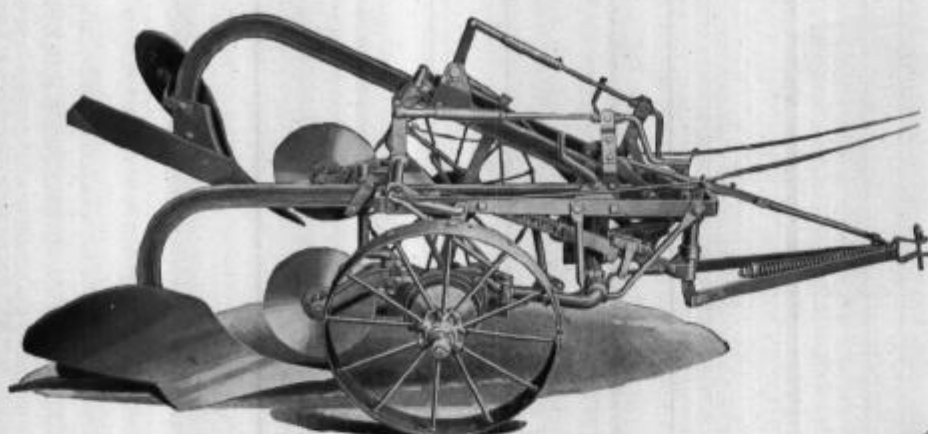
Illust. 4 — The No. 8 plow has abundant throat clearance for trash and heavy stalks. Between-beam braces extend down around the curves of the beams, providing extra reserve strength where the heaviest strains occur.



INTERNATIONAL HARVESTER



No. 38 1-Furrow 2-Way Moldboard Plow



Illust. 1 — The No. 38 two-way plow. The hitch is flexible up and down — when working in rough ground the plow is not affected by the motion of the tractor.

The No. 38 is a compact and easily maneuverable two-way plow for use on irrigated land and in hillside fields.

The hitch, designed for attachment to the center of the drawbar, changes position automatically when changing from one bottom to the other. The long cushion spring built into the hitch affords ample protection to both plow and tractor.

The two beam units are carried on a heavy one-piece axle. They have 22 inches of clearance and permit the use of colters as large as 18 inches in diameter. The power lifts, one for each beam, are controlled by a trip rope from the tractor seat.

Leveling screws and screw-type depth regulators are a great convenience when working in trash or under trees.

Regular Equipment

BBA, GA, HA, HSKA, KA, or SL bottoms in 14, 16, or 18-in., as ordered. Plain rolling colters (pair) with 16-in. full-circle blades. Steel wheels only.

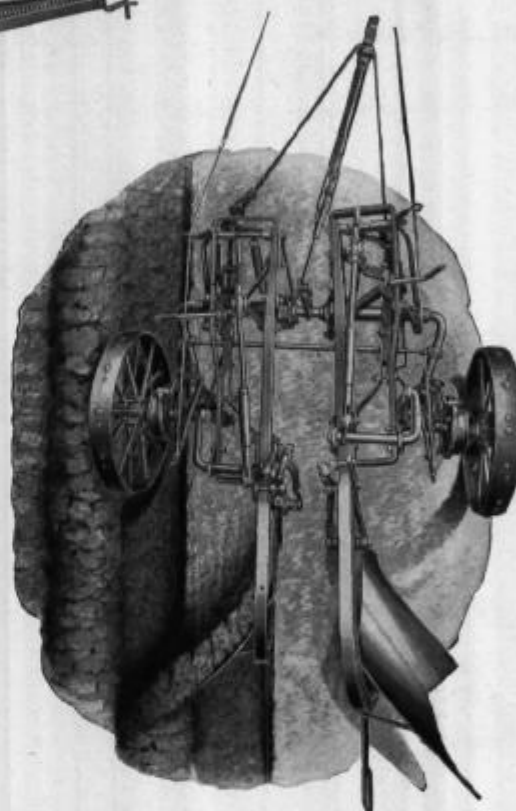
Special Equipment

Plain rolling colters with 18-in. full-circle blades or with 16 or 18-in. notched blades. Combination colters with 16 or 18-in. full-circle or notched blades. Stationary jointers. Wheel lugs—24 required.

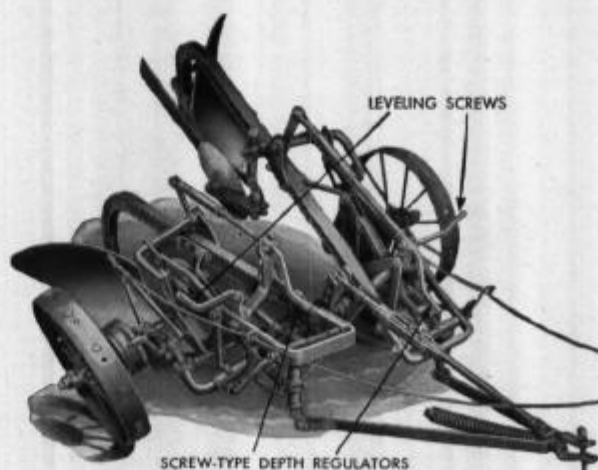
Specifications

Size	Net Weight (Approx.)
14-in.	981 lb.
16-in.	987 lb.
18-in.	1009 lb.

- Automatic hitch — adjustable for tractor wheel treads from 44 to 80 in.
- Cushion spring hitch.
- Strong, one-piece axle—ample clearance.

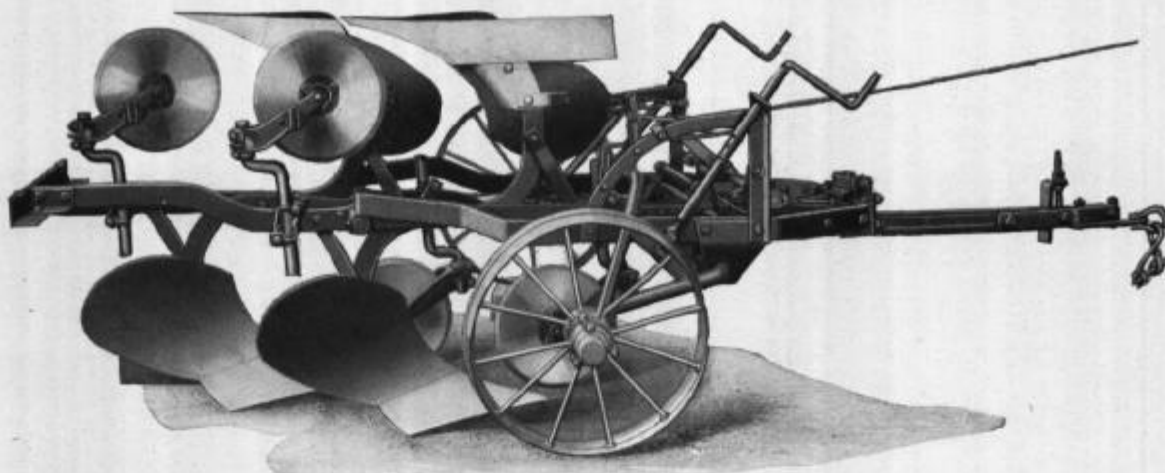


Illust. 2 — This illustration shows the hitch set for operation with wide tractor wheel tread. Adjustments are provided for treads from 44 to 80 inches.



Illust. 3 — The open, V-type hitch and simple, one-piece axle provide ample clearance for trash.

No. 39 Two-Way Roll-Over Plow



Illust. 1 — The No. 39 two-way roll-over plow with right-hand bottoms in working position. A single trip rope controls the roll-over operation. The 14-in. size is shown.

- A two-way plow with the width of a one-way—works with any type of tractor.
- Fully automatic—a single trip rope controls roll-over of bottoms and resetting of hitch.
- Ample penetration for depths to 12 inches—weight of revolving frame directly over bottoms.

The No. 39 is a 2-furrow plow that has all the advantages of a two-way plow with the compactness and simplicity of control of a one-way plow.

Fully Automatic Hitch

A slight pull of the single trip rope and the entire roll-over frame which carries the two sets of bottoms is quickly inverted. As the one set of bottoms rises, the other set is lowered into the soil; the land and furrow wheels automatically adjust themselves to the new position and the hitch swings over and locks on the opposite side.

For Any Type Tractor

Whether the right-hand or the left-hand bottoms are down the plow is always in the correct line of draft,



Illust. 2 (left) — A pull on the trip rope starts the roll-over operation. Another pull on the same rope puts the bottoms in the ground, the wheels taking their correct positions as land and furrow wheels as the bottoms go into the ground.



Illust. 3 — Cushion spring hitch, which can be supplied.

owing to the fully automatic operation of the hitch on the plow's drawbar. Simple adjustments on the curved drawbar make it possible to operate the plow behind any type tractor of suitable power.

Ample Clearance

The mounting of the wheels and the arching of the roll-over frame directly above the plow bottoms gives full clearance throughout the length of the whole plow frame. It is built to withstand the strains of plowing to a depth of 12 inches. Self-leveling, it will maintain the depth to which it is set, regardless of soil conditions. Penetration is at its best with this plow because the weight of the revolving frame is centered directly over the working bottoms. The depth of plowing is adjusted with two easy-turning cranks, conveniently located.

See also pages on *Plow Bottoms and Accessories*.

Regular Equipment

GA, GAU, HA, or SL bottoms in 14 or 16-in. size, as ordered. 16-in. plain-blade rolling colters. Steel wheels. POTH-194 rigid hitch.

Special Equipment

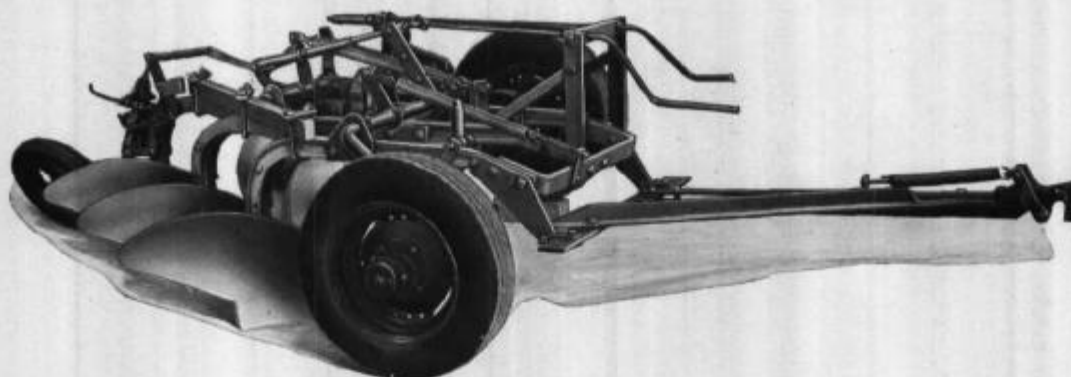
18-in. plain-blade, and 16 or 18-in. notched rolling colters. Combination rolling colters and jointers in 16 or 18-in. and plain-blade or notched. Stationary jointers. Wheels for 6.00 x 16 or 6.50 x 16 pneumatic tires (less tires). POTH-195. cushion-spring hitch. Short drawbar for use with narrow-tread 4-wheel tractors.

Specifications

Size	Net Weight, (Aprox.)
14-in.	1356 lb.
16-in.	1402 lb.



No. 10 Heavy-Duty Moldboard Plows



Illust. 1 — The No. 3-furrow No. 10 heavy-duty moldboard plow, shown with pneumatic-tired wheels (tires not supplied).

- Rugged construction for heavy soil.
- Ample clearance—axles located *above* the beams.
- Screw-type depth and leveling adjustment.

The No. 10 plows are built for work in heavy soils and for use with the more powerful tractors. They are of extra-heavy construction with heat-treated beams and axles, and with a massive tiebar. The between-beam braces at the rear extend down around the curves of the beams, reinforcing them at the points subject to the greatest plowing strains.

Clearance under the beams is 22 inches, and the spacing fore and aft is 21 inches. This means that there is actually more than 26 inches on the diagonal between the bottoms. Axles and axle brackets are above the beams, leaving full clearance for large furrows and trash.

The No. 10 plows are built in 2, 3, 4 and 5-furrow. The 2 and 3-furrow come with full-length beams; the 4-furrow either with three straight beams and a rear

offset beam or, as the No. 10-L, with four full-length beams; and the 5-furrow with four full length beams and an offset.

Cranks and screws for adjusting the depth and leveling the plow replace the customary land and furrow levers. The action of the screws is made easy by heavy springs which counterbalance the weight of the plow. An extra-heavy spring-release hitch protects the plow against breakage when one of the bottoms hits a root, stone, or other obstacle. The hitch provides ample adjustment to adapt the plow to various tractors. High-pressure lubrication fittings are provided throughout.

Steel land and front furrow wheels with 4-in. rims are regular equipment. Land wheels on all sizes are 30 inches in diameter. Front furrow wheels are 25-in. on the 2 and 3-furrow and on the 4-furrow with offset beam; they are 30-in. on the No. 10-L 4-furrow with long beams, and on the 5-furrow. The pan-type steel rear furrow wheels have 3-in. rims.

See also pages on Plow Bottoms and Accessories.

Regular Equipment

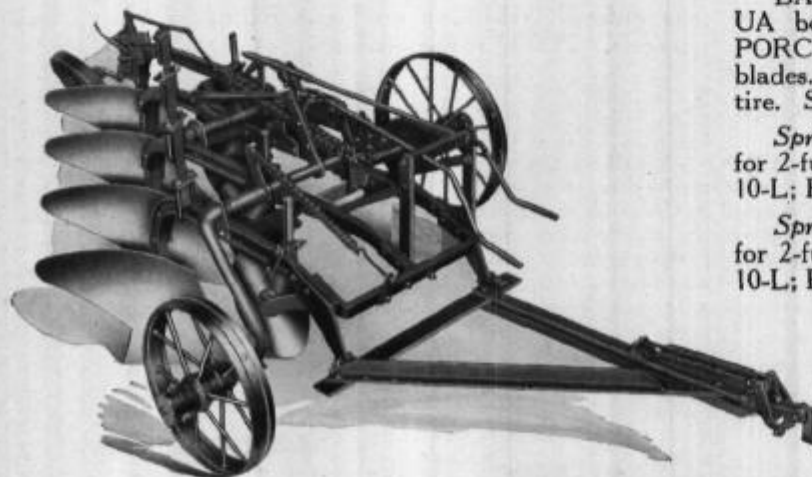
BA, BBA, GA, GAA, HA, KA, MA, N, SL, or UA bottoms in 12, 14, or 16-in. sizes, as ordered. PORC-112 heavy-duty rolling colters with 18-in. plain blades. Steel land and front furrow wheels with 4-in. tire. Steel rear wheel with 3-in. tire.

Spring release hitches for wheel tractors: POTH-114 for 2-furrow; POTH-116 for 3 and 4-furrow, except No. 10-L; POTH-208 for No. 10-L and 5-furrow.

Spring release hitches for crawler tractors: POTH-119 for 2-furrow; POTH-118 for 3 and 4-furrow, except No. 10-L; POTH-151 for No. 10-L and 5-furrow.

Specifications

No.	No. Bottoms	Net Weight (Approx.)—Lb.		
		12-in.	14-in.	16-in.
10	2	...	1123	1141
10	3	1462	1497	1534
10	4	1703	1750	1786
10-L	4	1849	1902	1945
10	5	2136	2157	2205



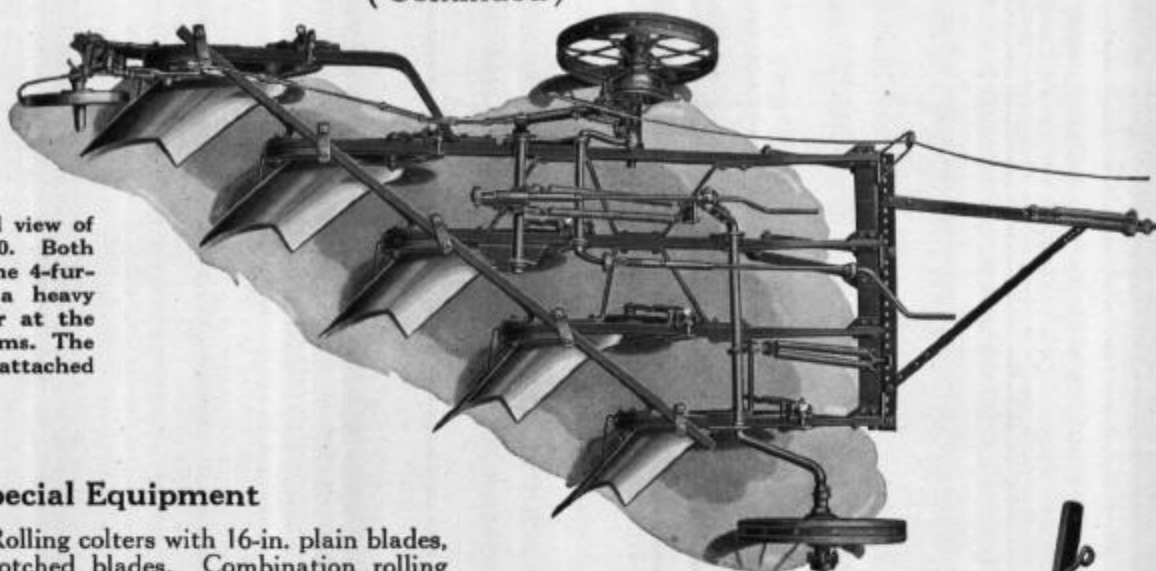
Illust. 2 — This is the 4-furrow No. 10, which has an offset rear beam and is of similar design to the 3-furrow.



No. 10 Heavy-Duty Moldboard Plows

(Continued)

Illust. 1 — Overhead view of the 5-furrow No. 10. Both the 5-furrow and the 4-furrow No. 10-L have a heavy angle steel spreader at the front end of the beams. The extra-heavy hitch is attached at three points.



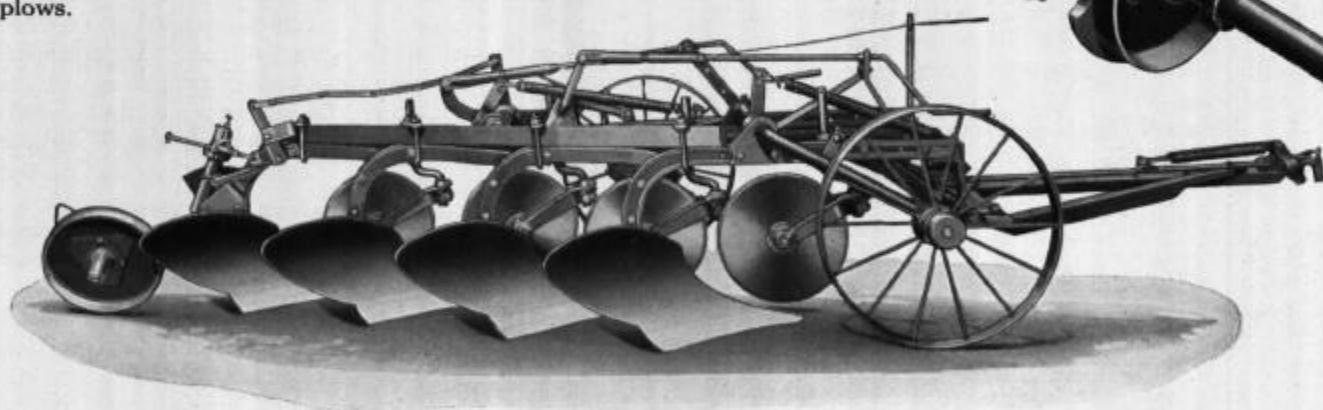
Special Equipment

Ground tools: Rolling colters with 16-in. plain blades, or 16 or 18-in. notched blades. Combination rolling colters and jointers with 16 or 18-in. plain or notched blades. Stationary jointers (less colters).

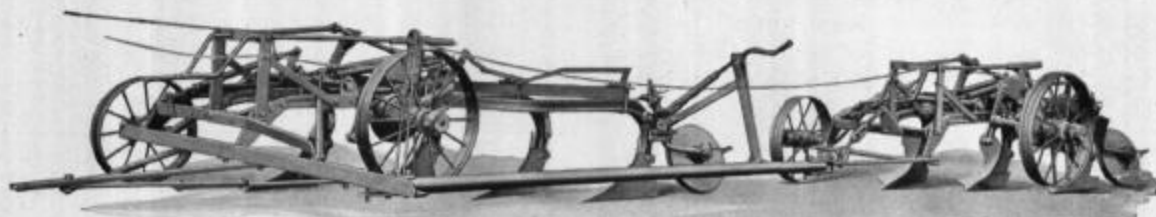
Wheels: 30x7-in. land wheel (in lieu of 30x4-in.). 25x7-in., 30x4-in. or 30x7-in. furrow wheel for 2, 3 and 4-furrow No. 10 (in lieu of 25x4-in.). 25x7-in. furrow wheel for 4-furrow No. 10-L (in lieu of 30x4-in.). 30x7-in. furrow wheel for 4-furrow No. 10-L and 5-furrow (in lieu of 30x4-in.). Land and furrow wheels for 16-in. pneumatic tires (less tires). Rear wheel with 3.50 x 12-in. 4-ply tire and tube.

Hitches: POTH-134 tandem hitch for two 3-furrow 14 and 16-in. plows. POTH-135 tandem hitch for two 4-furrow or one 3-furrow and one 4-furrow 14 or 16-in. plows.

Illust. 2 — The heavy-duty clutch, shown with bell housing removed.



Illust. 3 — Side view of the 4-furrow No. 10-L (long beam).

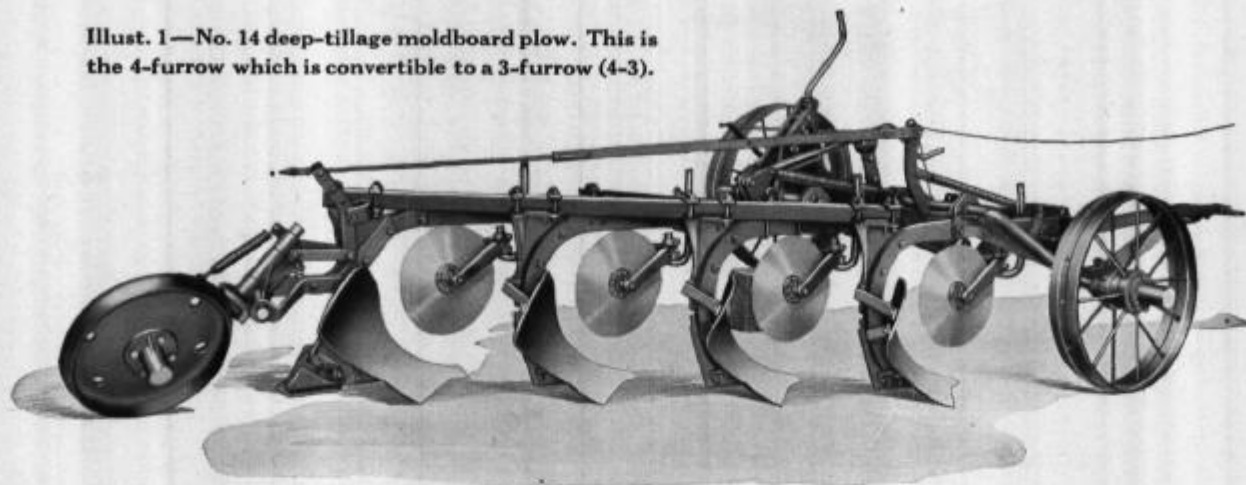


Illust. 4 — No. 10 4-furrow and 3-furrow plows in tandem hitch. Regular equipment on the plows includes 18-inch rolling colters (not shown in illustration).



No. 14 Deep-Tillage Moldboard Plows

Illust. 1—No. 14 deep-tillage moldboard plow. This is the 4-furrow which is convertible to a 3-furrow (4-3).



- For deep tillage at depths from 12 to 16 in.
- Extra heavy construction.
- Ample clearance under beams.
- Fully enclosed gear lift.

No. 14 tractor plows are deep-tillage plows designed for service where difficult conditions demand unusual strength. They come in 3 and 4-furrow sizes, and in 4-furrow convertible to 3-furrow (4-3) and 5 furrow convertible to 4-furrow (5-4). Plowing can be done at a depth of 12 to 16 inches depending upon the soil conditions and the amount of power available.

Heavy-Duty Construction

These plows have an extra heavy frame and strong, one-piece beams. The tie bar, which is $2\frac{1}{2}$ inches square, is located directly over the bottoms to assure rigidity. The bottom standards are mounted on heavy iron brackets which are joined to the tie bar, each by two heavy clamps. The beams, land axle and rear furrow axles are all heat-treated for greater strength.

Ample Clearance

Fore and aft clearance between the beams is 24 inches and the clearance under the beams is 25 inches. The land and furrow axles are mounted on top of the plow frame to provide ample clearance under the frame. The axles are $2\frac{1}{2}$ inches in diameter with raising arms welded to the axles. The rear furrow axle is 2 inches in diameter.

The plow hitch is attached well below the tie bar to provide ample clearance under the front end of the plow. The swinging clevis gives added flexibility.

Cranks and screws take the place of the customary land and furrow levers. The weight of the plows is

counterbalanced by heavy springs so that there is a comparatively light load on the screws which are designed for easy operation and minimum wear.

Power Lift

The fully enclosed gear lift, controlled by a rope, has a reduction gear between the clutch and the land wheel. This assures positive raising action at all times without lugs or cleats. The plow is raised and lowered on all three wheels, thus giving the plow a high-level lift. The land and furrow wheels are 34 inches in diameter with 6-in. tires. The rear wheel is a cast wheel and is 24 inches in diameter.

A newly designed rear axle construction provides ample side thrust in plowing position. In transport position the wheel automatically straightens up to caster freely, permitting the operator to make short turns and to transport the plow at high speeds without sidesway.

See also pages on *Plow Bottoms and Accessories*.

Regular Equipment

14-in. GA, GAA, HA, HSKA, KA, MA, or UAT bottoms, as ordered. 18-in. plain rolling colters (less jointers).

Special Equipment

18-in. notched rolling colters (less jointers). Combination rolling colters and jointers with 18-in. plain or notched blades.

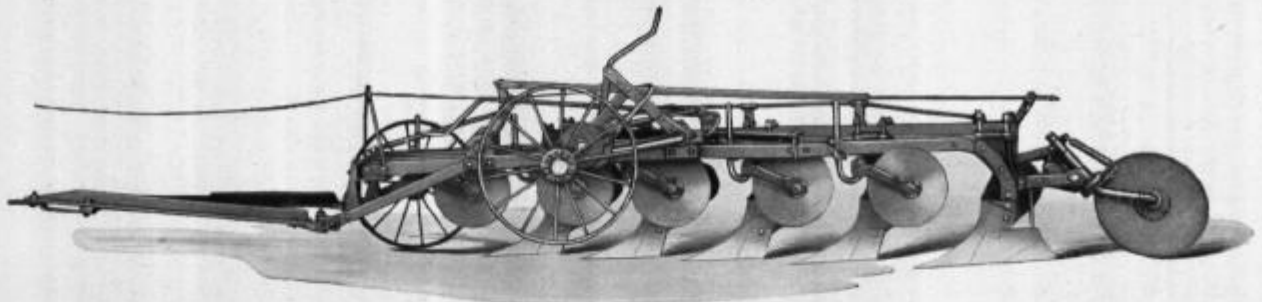
Specifications

Size	Description	Net Weight, (Approx.)
14-in.	3-furrow	2146 lb.
14-in.	4-3-furrow	2448 lb.
14-in.	4-furrow	2606 lb.
14-in.	5-4-furrow	2940 lb.

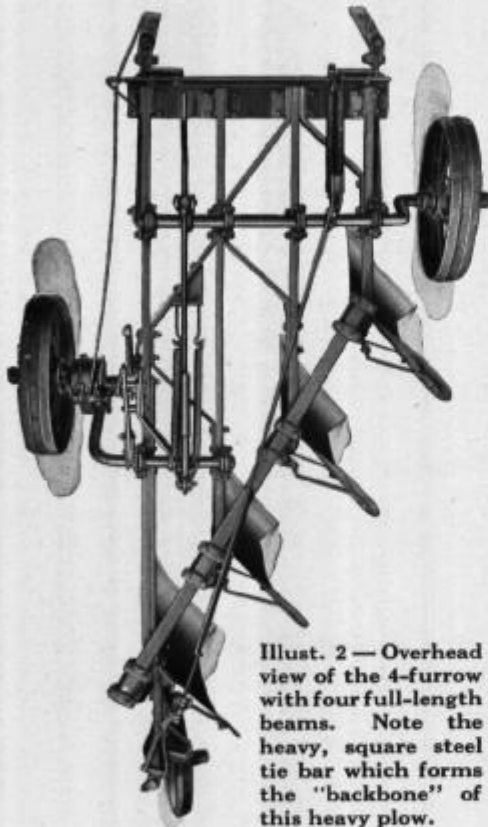


No. 14 Deep-Tillage Moldboard Plows

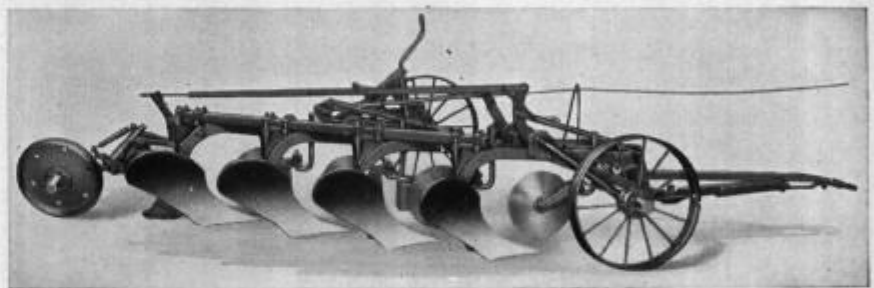
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Illust. 1 — Landside view of the 5-furrow plow.



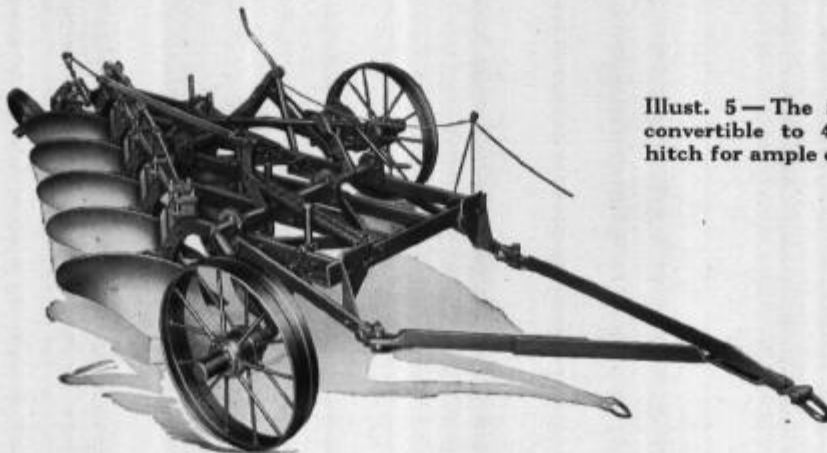
Illust. 2 — Overhead view of the 4-furrow with four full-length beams. Note the heavy, square steel tie bar which forms the "backbone" of this heavy plow.



Illust. 3 — This is the 4-furrow with full-length beam for the rear bottom.



Illust. 4 — The 3-furrow comes with three full-length beams.



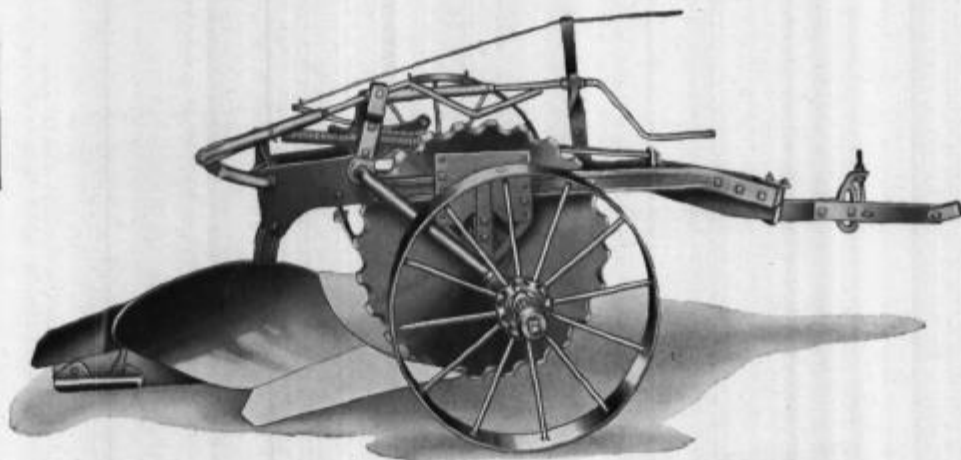
Illust. 5 — The 5-furrow No. 14 plow, which is convertible to 4-furrow. Note the open, V-type hitch for ample clearance.



No. 11 Muck Land Plow

- For work in muck land and heavy growths.
- Plows 12 to 16 in. deep.

Illust. 1—No. 11 muck land plow, shown with 33-in. notched rolling colter.



The No. 11 is a heavy, single-bottom, power-lift plow for deep plowing in muck land and heavy growths. It has unusual covering ability. It can be used with one of the larger Farmalls or with crawler tractors.

Without any preliminary disking it will go into weeds 6 to 10 feet high and do a good job of covering. Under such conditions it is usually pulled by a crawler tractor which does a better job of breaking down the vegetation ahead of the plow.

The plow is equipped with an 18-in. bottom and will plow as deep as 12 to 16 inches. The bottom is of special design and has an extremely long landside, which takes the place of the rear wheel in steadying the plow. The landside is also quite high and equipped with a replaceable heel. The moldboard is equipped with a wing extension. For extra-deep plowing an extension moldboard can also be supplied.

The rolling colter is of the rigid type with notched blade and can be had in either 24 or 33-in. diameter. The colter is run quite deep and this also aids in steadying the plow.

In place of the usual levers for adjusting the depth and leveling the plow, this plow is equipped with screws which are quick-acting and provide accurate adjustment. The action of the screws is made easy by heavy counterbalancing springs.

The beams and axles are of high-carbon steel, heat treated for strength. The wheels are of 30-in. diameter with 7-in. tires. The land wheel is equipped with lugs to assure good traction in sandy or fluffy ground.

Regular Equipment

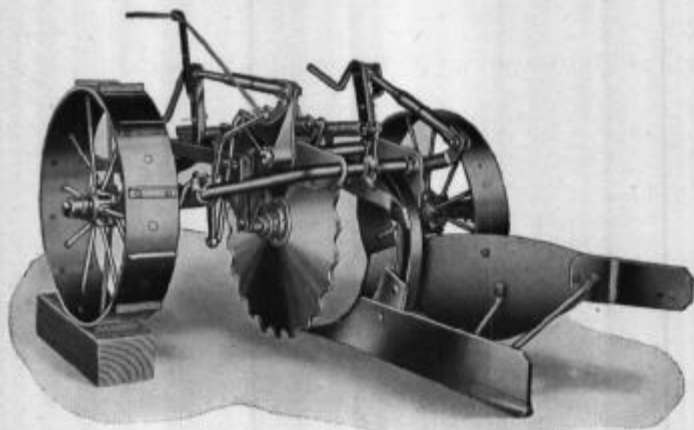
18-inch FKA-4F bottom. Rolling colter with either 24-in. or 33-in. notched blade, as ordered. POTH-152 rigid tractor hitch.

Special Equipment

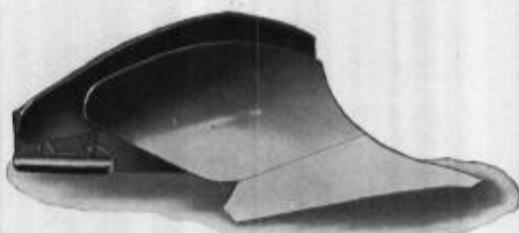
20 or 24-in. FKA-16 bottom (oversize rice share). PO-19305 deep plowing moldboard extension. POTH-169 spring-release hitch.

Specifications

Description	Net Weight (Approx.)
No. 11 with 24-in. colter.....	799 lb.
No. 11 with 33-in. colter.....	893 lb.



Illust. 2—Rear view of the No. 11 plow showing the long landside and the bracing of the mold extension.



Illust. 3—Bottom for No. 11 plow shown with deep-plowing moldboard extension (special).



No. 2 Tractor Subsoil Plow

- Operates at depths from 8 to 22 inch.
- 28-in. vertical clearance for work in trash.
- Removable chisel point.

Illust. 1 — The No. 2 tractor subsoil. plow. The long lever is within easy reach of the operator for convenient adjustment. Note two slots in the adjustable lift link (see arrow): the upper slot is for average depth; the lower slot, as shown in Illust. 2, is for maximum depth.

Loosens the Soil to a Maximum Depth of 22 inches

The No. 2 subsoil plow is well liked for its ability to loosen packed subsoil both in crop and pasture land. By opening the ground at regularly spaced intervals the plow reduces dangerous run-off, greatly increasing absorption and storage of moisture. Through better aeration of the soil it greatly aids in root development.

The plow has a strong, one-piece beam of $3\frac{1}{2} \times 1\frac{1}{4}$ -in. stock. It has 28-in. vertical clearance for use in trashy conditions. Ample adjustments are provided to permit operation at depths from 8 to 22 inches.

The chisel point, 2 inches wide, approximately $12\frac{1}{2}$ inches long and $1\frac{1}{4}$ inches thick, is made of high carbon steel and can be removed for sharpening. A shin attached above the point protects the beam against wear.

Wheels are 30 inches in diameter and have 4-inch tires. The main axle is $1\frac{3}{4}$ inches in diameter and the power lift is of the same design as the well-known No. 8 tractor plow.

A 16-inch rolling colter for cutting the sod and trash ahead of the beam is available when ordered. It is especially recommended when subsoiling at depths from 8 to 18 inches.

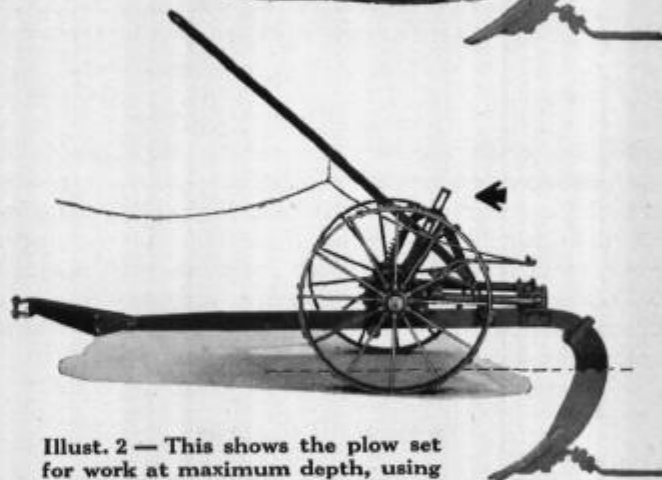
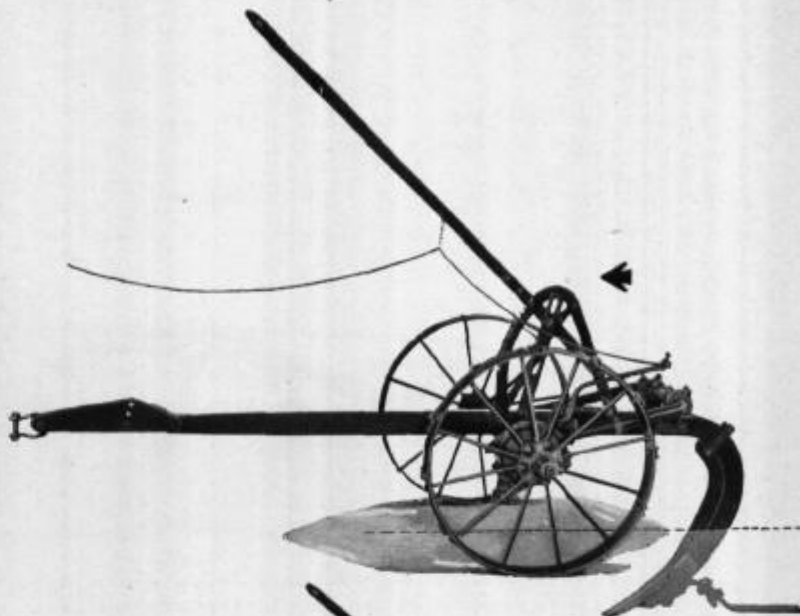
See also pages on *Plow Accessories*.

Special Equipment

16-in. plain-blade rolling colter.

Specifications

Description	Net Weight (Approx.)
No. 2 Subsoil Plow.....	477 lb.



Illust. 2 — This shows the plow set for work at maximum depth, using the lower slot of the adjustable lift link. Hitch plates are adjustable for keeping the beam level at the various depths.



Illust. 3 — The power lift, controlled by trip rope, has a practically dustproof housing. Pressure lubrication fittings are provided.

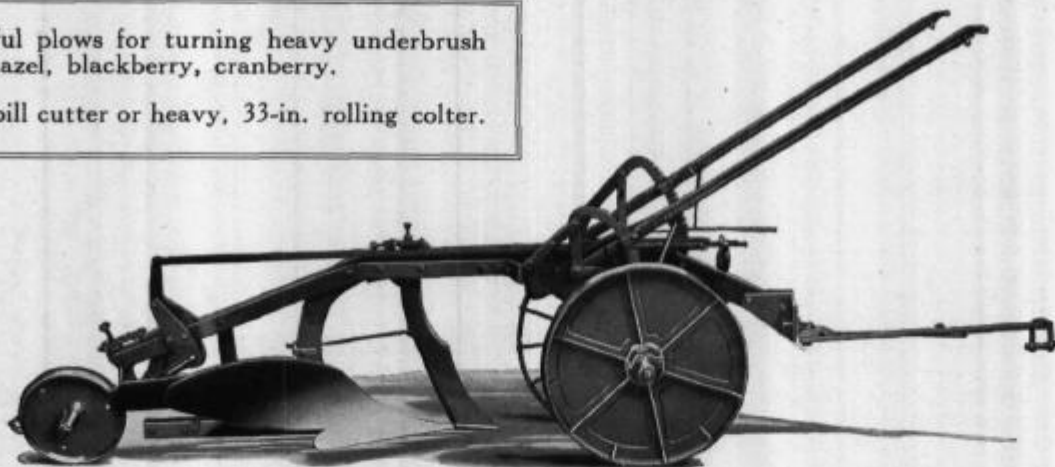


Illust. 4 — The adjustable gauge foot attached to the rear of the beam assures uniform depth under varying soil conditions.



Nos. 459 and 461 Tractor Brush Breaker Plows

- Powerful plows for turning heavy underbrush . . . hazel, blackberry, cranberry.
- Duck-bill cutter or heavy, 33-in. rolling colter.



Illust. 1 — The No. 459 tractor brush breaker comes with 20-in. bottom. Shown here with duck-bill cutter, which is regular equipment.

These brush breakers are stoutly constructed for plowing heavy underbrush such as hazel, blackberry and cranberry. The No. 459, which has a long, sloping 20-in. bottom, has even been used for turning under small trees or saplings. Both plows are well adapted to heavy virgin soil, turning the furrow completely upside down and, if the plowing is deep enough, make it possible to harrow and crop the same year.

Duck-Bill Cutter

The duck-bill cutter cuts heavy roots and clears the way for the plow. The point of the share fits into a hole in the heel of the cutter, and a tie rod from the beam to the cutter prevents the cutter from pulling away from the share when the plow is backed out of a stump. The bottom has a soft center steel mold and solid steel share.

The beams are of high-quality steel, heat-treated to provide reserve strength for resisting the unusual strains to which plows of this type are subjected. A sturdy power lift controlled by trip rope makes it easy to get the plow in and out of the ground. Drawbars are adjustable for tractors of various widths.

Regular Equipment

No. 17 duck-bill cutter for No. 459, No. 16 duck-bill cutter for No. 461.

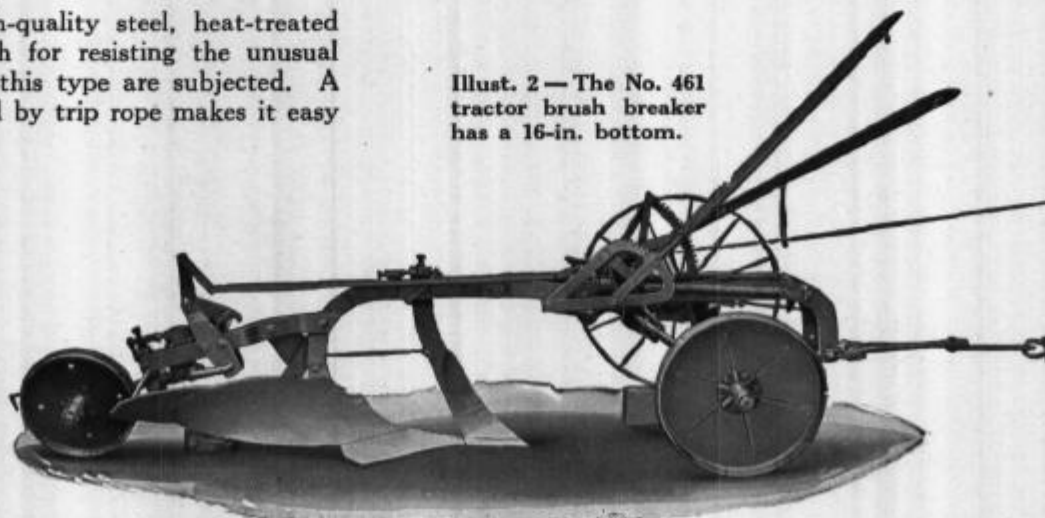
Special Equipment

No. 105, 33-inch rolling colter for No. 459 (for use in lieu of No. 17 duck-bill cutter). Vertical fin cutter for No. 459 (in lieu of No. 17 duck-bill cutter). SARC-67 25-inch rolling colter for No. 461 (for use in lieu of No. 16 duck-bill cutter). 8-inch marsh type wheels for No. 459.

Specifications

No.	Size Bottom	Description	Net Weight (Approx.)
459	20-in.	Tractor brush breaker with duck-bill cutter	1533 lb.
459	20-in.	Tractor brush breaker with 33-inch colter (special)	1628 lb.
461	16-in.	Tractor brush breaker with duck-bill cutter	950 lb.

Illust. 2 — The No. 461 tractor brush breaker has a 16-in. bottom.



Bottoms and Accessories for Moldboard Plows



Illust. 1—The GA is a soft-center stubble bottom. The GAA is the same bottom with $\frac{3}{8}$ -in. share. The GAU is a stubble bottom for use on the No. 39 two-way plow.



Illust. 2—The HA is a soft-center general-purpose bottom with a more gradual turn than the stubble type. A wide variety of share styles can be supplied.



Illust. 3—The KA is similar to the HA (left) except that it has a longer moldboard and a moldboard extension to help turn the furrow slice. It is also of soft-center steel.



Illust. 4—The HSKA is a high-speed general-purpose bottom of soft-center steel.

Illust. 5—The BA (right) is a general-purpose bottom for use in hilly ground and gravelly soils. It has a chilled mold and shin and is regularly equipped with chilled deep-suck share. Cobblestone and double-deep suck shares are also available. Regular share cuts approximately 2 in. less than the listed width of bottom.

The BBA (not illustrated), designed for use in stony clay soil, comes with soft-center mold, replaceable shin, and solid share.



Types of Bottoms

Bottoms are available in an unusually wide variety of shapes and materials to adapt International Harvester plows for use in every type of crop and soil condition.

Shapes. The *stubble* bottom has a bluff mold which rises steeply from the back of the share. It gives the soil a pitching action, barely turning the furrow slice before the soil falls into the furrow, well broken and level. Such a bottom is used where the soil pulverizes readily and where the surface vegetation such as corn and small grain stubble, is easily covered.

The *general-purpose* bottom slopes back more gradually, thereby turning a more ribbon-like furrow slice. Because of its gentler action it does not pulverize the soil as much as the stubble type. The general-purpose bottom is generally used for turning somewhat heavier soils and denser sods such as timothy, clover and alfalfa. On farms having a variety of crop and soil conditions this bottom is frequently used for both tame hay and stubble.

The *high-speed* bottom, similar to the general-purpose, is designed for use with the modern, fast-moving tractors, which are apt to make the older type bottoms throw the dirt too far. The high-speed bottom will plow efficiently at speeds up to 5 miles an hour, yet turn a full, even furrow when field conditions call for lower speeds.

The *breaker* bottom, no longer widely used, has a long, sloping moldboard which lifts the furrow slice very gradually and gives it a full turn for complete inversion. It is designed for plowing very tough virgin sod and for lands being returned to cultivation after years of idleness.

Illust. 6—The N is a soft-center breaker bottom for blue grass sod, virgin soil, etc. It lays the furrow slice completely over. It comes with solid shares in regular and rice patterns.



Illust. 7—The MA is a soft-center blackland bottom adapted to volcanic ash and heavy clay soil and can be supplied with solid shares in regular and rice patterns.



Illust. 8—The SL is the slat bottom. It is regularly supplied with soft-center slats and share.



Illust. 9—The UA is a deep tillage bottom with a high, soft-center mold, replaceable chilled shin and soft-center share.

The UAT (not illustrated) has a larger mold, especially designed for use with the No. 14 plow.



Bottoms and Accessories for Moldboard Plows

(Continued)



Illust. 1—A cross-section view of soft-center steel.

The *blackland* and the *slat* bottoms are specially shaped to promote good scouring in extremely sticky soils. The blackland, for use only in the Texas blackland area, is so shaped that the soil keeps pressing evenly and uniformly throughout its travel over the share and moldboard. The slat bottom is used in loose, sticky soils where the soil pressure is apt to be uneven and "patchy." Because part of the moldboard has been removed, the remaining surface area receives more pressure. This assures an even, steady passage of the soil.

Deep tillage bottoms are designed for use with heavy-duty and deep tillage plows, which work to depths of 12 to 16 inches.

Landsides. Bottoms have landsides of different lengths according to the type of plow and the number of bottoms; bottom numbers have suffix letters as indicated:

SHORT—no suffix letters (*right-hand only*): Forward bottoms (all except rear) on Nos. 4, 8, 10 and 14 plows.

LONG—suffix *MN* (*right-hand only*): Rear bottom on Nos. 8, 10 and 14 plows.

MEDIUM SHORT—suffixes *RT* (*right-hand*) and *LT* (*left-hand*): Forward bottoms on No. 39.

EXTRA LONG—suffixes *R* (*right-hand*) and *L* (*left-hand*): A-192, AV-192, B-192 and BN-192; A-187, B-187 and BN-187; H-190 and H-186; No. 3 without rear wheel; No. 4 rear bottom without rear wheel; No. 38; No. 39 rear bottoms.

Materials. *Soft-center* steel is widely used because of its ability to scour well in clay, clay-loam and similar soils. This material has three layers—two outer layers of high-carbon steel and an inner one of low-carbon steel. The outer layers are extremely hard, yielding a mirror-like surface when polished by the soil. The inner layer, which is quite soft, gives the plate the necessary toughness to withstand the strains of plowing. Extra thickness of high-carbon steel is provided at the share point and on the shin of the moldboard, where the greatest wear occurs.

Solid steel shares (also called crucible steel) are used where scouring is no problem, but they wear too rapidly to be satisfactory in sand and gravel.

Chilled bottoms and shares are generally used for work in sandy and gravelly soils, which cause a great

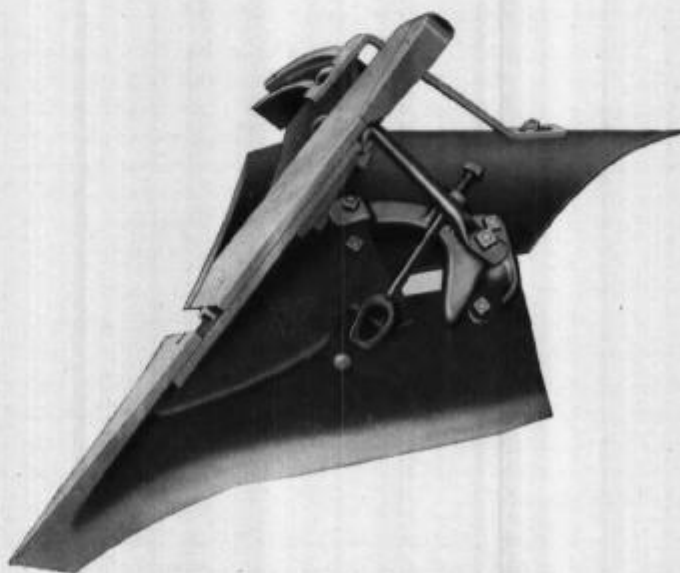
deal of abrasive wear and, at the same time, do not require the high polish of soft center for scouring. Chilled iron is made by pouring into special molds, where rapid cooling on the outside produces a very hard and close-grained working surface. *Steel cast* shares, made of an especially hard mixture of steel and alloy, are provided on 16 and 18-in. BBA general purpose and other bottoms.

Some soft-center bottoms are equipped with chilled shares for work in soils that do not scour readily yet have enough sand to cause rapid wear. To avoid breakage under very stony conditions chilled bottoms are sometimes equipped with shares of either soft-center or solid steel.

Shares

To adapt plow bottoms to a variety of conditions shares are supplied in a number of different styles and materials. "*Regular*" shares, in most common use on stubble and general-purpose bottoms, have a well-defined point which swings back steeply to the blade. The blade is approximately parallel to the rear margin adjoining the mold. The outer, or right-hand, end of the blade usually forms a right angle to the rear margin. A bottom with such a share usually has the same width of cut as the listed size of the bottom.

Alfalfa shares are considerably wider, having a greater distance between the blade and the rear margin. As a result, the wing, or corner, produces a greater width of cut for handling thickly matted roots.



Illust. 2—Underside view of International Harvester bottom with share detached to show convenient lock bolt construction. Note also replaceable chilled heel on the landside.



Bottoms and Accessories for Moldboard Plows

(Continued)

Cobblestone shares have a reduced width of cut. These shares are popular for dodging small boulders in stony ground.

Rice, or *blackroot* shares have a much greater cutting angle for more effective shearing action. Other types include the *blackland*, the *breaker*, the *peat land*, etc.

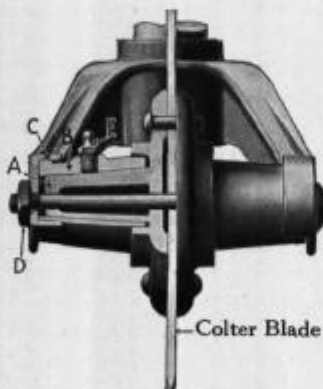
Deep suck shares dip downward steeply at the point to provide additional suction.

Share styles. Eight styles are available. They are identified by the following numbers:

1. Regular pattern, soft-center steel
2. Regular pattern, solid steel
3. Alfalfa pattern, solid steel
4. Rice or blackroot pattern, soft-center steel
5. Rice or blackroot pattern, solid steel
7. Cobblestone pattern, solid steel
9. Regular pattern, chilled steel
10. Deep suck pattern, chilled steel



Illust. 1 — Combination-type rolling colter and jointer. The rolling colter leaves a neat furrow-back in soft or crumbly soils and is especially effective in handling bulky stalks and trash. The jointer is readily adjustable and can also be removed when conditions so require.



Illust. 2 — Rolling colter with hub partially cut away to show construction. (A) is the cone portion of the colter hub. (B) is the bearing sleeve, held stationary by the lug (C) which fits in a notch in the colter yoke. The nut (D) can be tightened to take up play. There is a pressure lubrication fitting at (E).



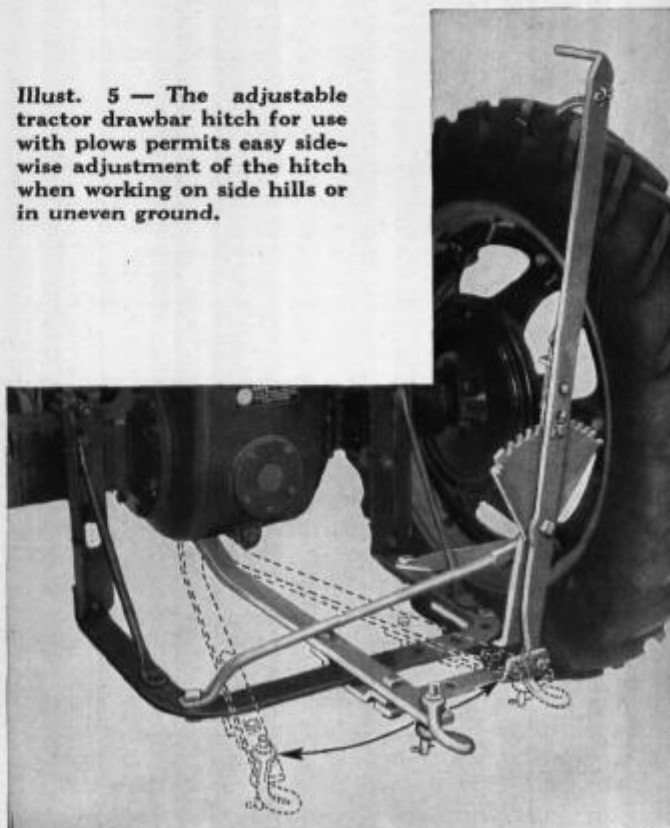
Illust. 3 — The independent, or stationary jointer is favored in hard or stony soil where a rolling colter may fail to penetrate or cause the plow to "ride" out of the ground. When desired, a stationary jointer and rolling colter can also be used together.

Illust. 4 — Notched colters are well liked in hard ground and in tough-fibered trash, where regular full-circle disks may fail to cut through.

The notches keep the disk rolling and prevent its riding over the material or pushing it ahead. Stalks and roots are held down firmly and get an extra cutting action as they are engaged by the individual notches.

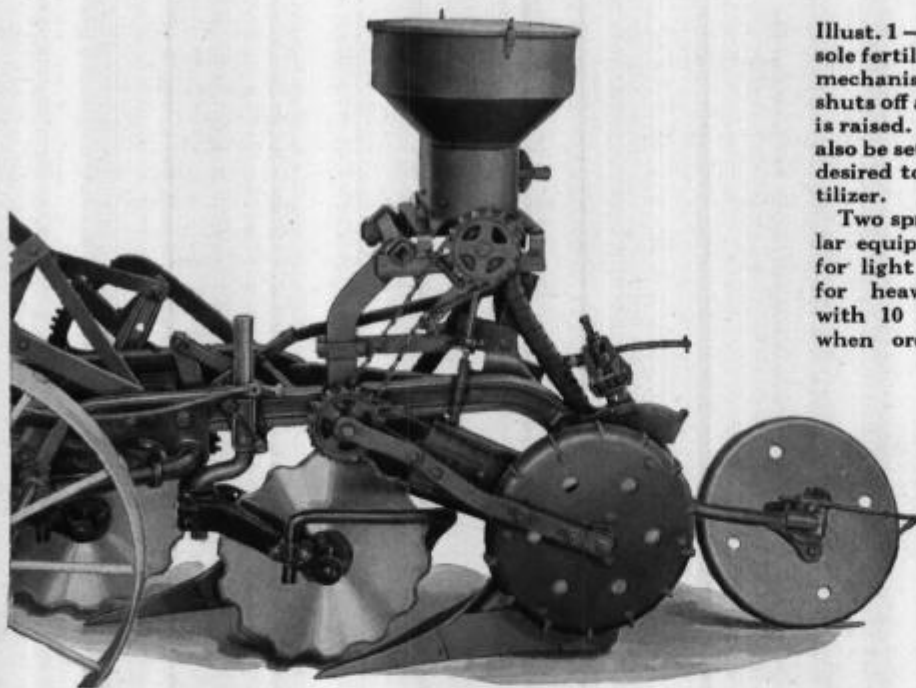


Illust. 5 — The adjustable tractor drawbar hitch for use with plows permits easy side-wise adjustment of the hitch when working on side hills or in uneven ground.



No. 46 Plowsole Fertilizer Attachment

For 2-Furrow No. 8 Plows



Illust. 1 — No. 8 plow with No. 46 plowsole fertilizer attachment. The driving mechanism is simple and positive. It shuts off automatically when the plow is raised. The ground drive wheel can also be set in raised position when it is desired to plow without applying fertilizer.

Two sprockets are supplied as regular equipment—a 16-tooth sprocket for light application and an 8-tooth for heavy application. Sprockets with 10 and 12 teeth are available when ordered.

- Makes plant food available during entire growing season, especially in midsummer drought.
- Permits large applications for more profitable production.
- Retards conversion of nitrogen fertilizer to nitrates . . . minimizes fixation of phosphate and potash.
- Lessens early weed growth in wet seasons.

Among the most important research projects fostered for many years by the National Joint Committee on Fertilizer Application have been extensive experiments on the deep placement of fertilizer. As a result of these tests, conducted by various experiment stations, fertilizer companies and progressive farmers, widespread interest has centered on the application of fertilizer on the bottom of the plow furrow.

This new method, for which equipment was originally developed at Purdue University, has been found remarkably effective in supplying ample nourishment to the plant during the period that it is making its growth. Crops which have received only a top-dressed "starter" application frequently fail to hold their advantage for lack of nutrients at the root level. During the midsummer droughts, nitrogen (in nitrate form) is apt to

move to the surface and phosphates and potash to remain in the dry zone if placed near the surface. When placed at the bottom of the furrow the fertilizer is in contact with the moisture necessary to make the nutrients available to the plant.

Plowsole fertilizer application has been found most profitable with corn and other high-acre-value crops which make their growth over a long period of time. It is of special value to crops which develop extensive and deep-feeding root systems which require large amounts of plant food. The older practice of plowing under of broadcast fertilizer not only places it both high and low in the soil but also mixes it with the soil, thus losing many of the advantages of the deep band placement.

It should be noted that plowsole application does not wholly take the place of hill, or row fertilizer placement but should be used in addition to this and other recognized soil improvement practices. It is considered especially profitable on soils of medium to low fertility which are also relatively low in organic matter and are not regularly receiving applications of livestock manure.

See also following page.

Specifications

Description	Net Weight (Approx.)
No. 46 Plowsole Fertilizer Attachment for 2-furrow No. 8 plow.....	161 lb.



INTERNATIONAL HARVESTER

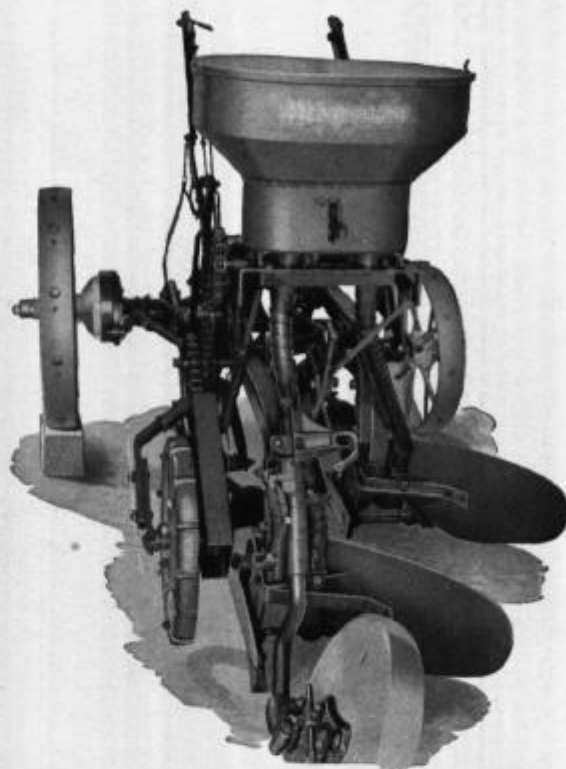


No. 46 Plowsole Fertilizer Attachment

(Continued)



Illust. 1—The plowsole fertilizer attachment deposits the fertilizer in a narrow, concentrated band at the bottom of the furrow to assure maximum availability of plant foods for corn and similar crops.



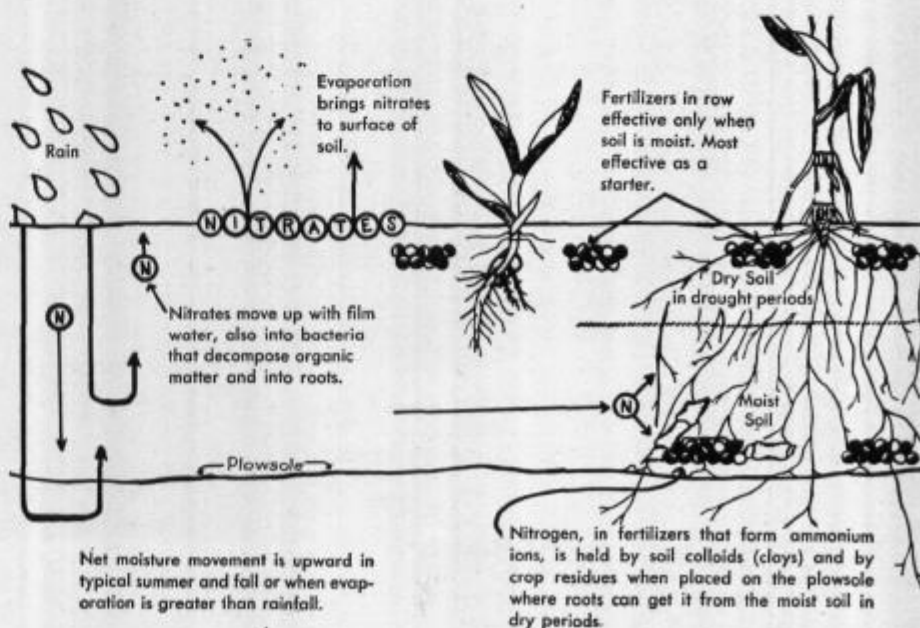
Illust. 2—The large fertilizer hopper is equipped with star-feed type of delivery, which will handle a wide variety of fertilizer mixtures. No tools are required to remove parts for cleaning. The convenient lever and quadrant assure easy setting for quantity.

The distributor tubes are attached behind the moldboards and deposit fertilizer without interference from trash.

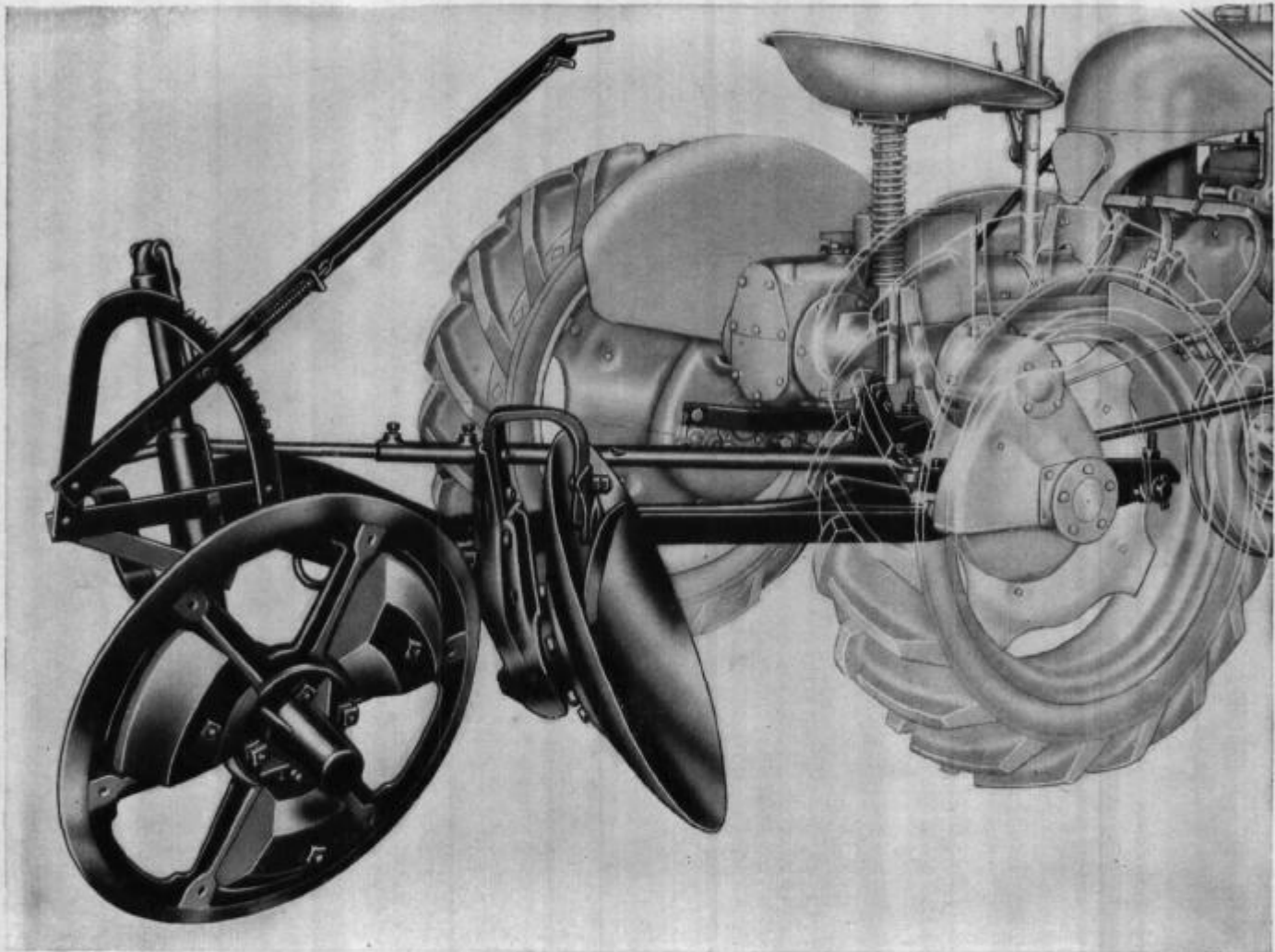
Illust. 3—This diagram shows why plowsole placement of fertilizer is desirable to make possible the feeding of crops during a mid-season drought.

It shows how nitrogen in the form of nitrates tends to move to the surface of the soil with the soil moisture and is left on the surface when the water evaporates.

When fertilizers are applied on the plowsole, deep plowing is usually better than shallow plowing.



Farmall Cub
Cub-151 Disk Plow
Rear-Mounted, One-Disk



Illust. 1—The Cub-151, one-furrow, disk plow is a sturdily-built unit for efficient operation in hard, dry ground, in sticky and abrasive soils, and in stony and root-infested fields.

- A closely coupled, sturdily-built unit.
- Designed for efficient operation in hard, dry ground, in sticky and abrasive soil, in stony root-infested fields, and for soil conservation work.
- The disk is heat-treated to withstand hard wear.
- Easy to operate; quickly and easily adjusted.
- Farmall Touch-Control or manual control.
- Designed for quick-change attaching.

Regular Equipment

Lever-type plow leveling adjustment. 26-inch disk rotates on chilled bearing. Three wheel weights. Mold-board scraper.

Special Equipment

Timken disk bearing in place of chilled bearing. Extra wheel weights. Four-inch sand rim with bolts.



Farmall Cub

Cub-151 Disk Plow

(Continued)



Specifications

Disk Plow No.	UNIVERSAL UNITS REQUIRED		No. Disks	Net Weight (Approx.)
	Touch-Control	Manual Control		
Cub-151	None	No. 511 893 R92 Raising Lever and Rear Rockshaft No. 511 894 R91 Front Rockshaft	One	556 lb.

Ideal for Rugged Conditions

The Cub-151 single-disk plow (mounted on the tractor mounting pads on the rear axle housing) is a closely coupled, sturdily built unit for efficient operation in hard, dry ground, in sticky and abrasive soil, and in stony and root-infested fields. It is the ideal unit for building and maintaining terraces.

Deep, 10-Inch Furrow

The 26-inch disk, heat-treated to withstand hard wear, cuts a deep 10-inch wide furrow.

Automatic Steering

The furrow wheel is steered automatically by means of an arm connected to the tractor steering linkage; hence the plow cuts a full-width furrow, even on sharp curves. A simple set-screw adjustment in the steering

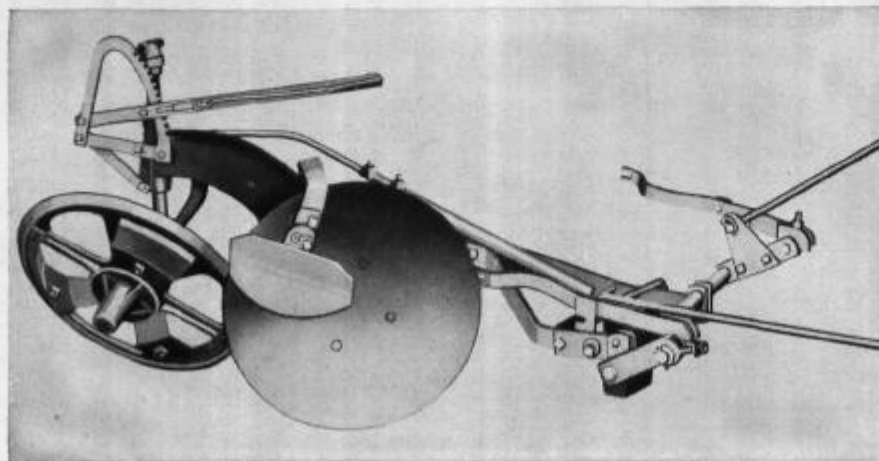
linkage makes it easy to change the angle of the furrow wheel. This adjustment assures the cutting of a full-width furrow regardless of soil conditions or the slope of the land.

Easy to Raise, Lower and Adjust

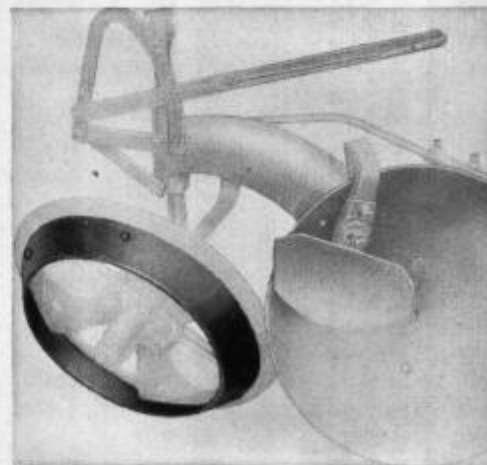
When the Farmall Cub includes Touch-Control, a fingertip touch of the Touch-Control lever raises and lowers the unit and controls the plowing depth. With manual control, a spring-balanced lever, to the driver's left, performs these functions. With both methods of control, an easy-to-reach lever, positioned on the plow just behind the operator, serves to level the beam longitudinally and also change the operating depth. This lever can also be used to raise the disk extra high for transporting. An adjustment is provided in the drawbar right-hand hitch plate which permits leveling the plow laterally.

Easy Operation with Equalizing Drawbar

The Cub-151 equalizing drawbar contributes much to the operating ease of this plow. This drawbar is a specially designed hitching device which permits side movement of the plow without shifting the draft from the center of the tractor. This feature results in a plow and tractor combination that is easy to steer. Shifting of the plow is not transmitted to the tractor, nor is the plow affected immediately when the tractor is turned.



Illust. 2 — The Cub-151, one-furrow, disk plow unit showing simple, sturdy construction.

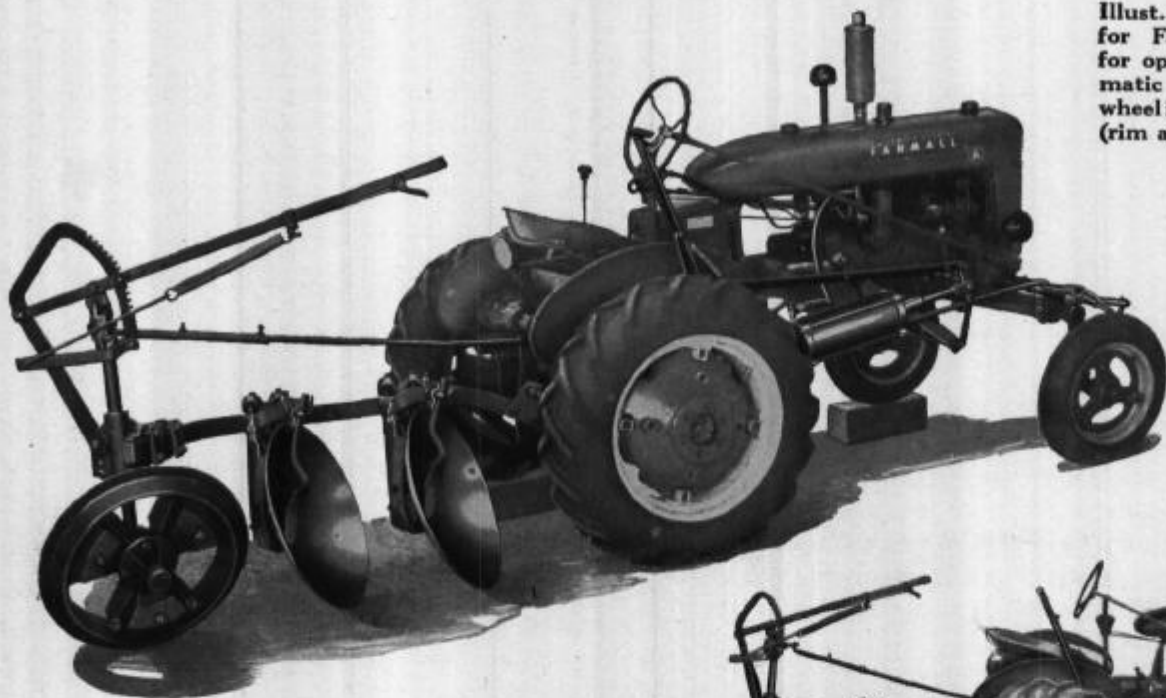


Illust. 3 — Cub-151, furrow wheel sand-rim attachment, for use in loose or sandy soil.



A-147 and B-147 Disk Plows

(For Farmalls A and B)



Illust. 1 — A-147 disk plow for Farmall-A equipped for operation with pneumatic Lift-All. The rear wheel is double-flange type (rim at center).

- Close-coupled for easy handling—ideal for small fields and hillside plots . . . for building and maintaining terraces.
- Rear wheel automatically steered from tractor.
- Adjustments for depth, leveling, penetration, and width of cut.
- Disks have dirt-sealed, tapered roller bearings.

The A-147 and B-147 disk plows are close-coupled units with a rear wheel automatically steered from the tractor, making it easy to follow curving terraces, to plow out corners, or back up in tight spots. They are sturdily built for efficient operation in hard, dry ground, in sticky soil, or in stony or root-infested fields. They are especially well suited for building and maintaining terraces where their pitching action in loose ground makes it possible to speedily move large quantities of dirt to the desired location.

The plows are readily adapted to a wide variety of requirements. Hitch adjustments make it possible for the single-disk plows to cut furrows from 7 to 12-in. wide, and the 2-disk to cut furrows from 14 to 20-in. wide. Removal of one disk readily converts a 2-disk to a 1-disk for work under adverse conditions. Simple adjustments on the disk standards regulate the amount of pitch. A convenient lever at the side of the operator regulates the depth.

On the hand-lift plows this lever also raises the plow in transport; on power-lift machines a pneumatic Lift-All cylinder raises the plow. With the rear lever the operator levels the beam and also raises the plow to extra-high lift for transport. A simple adjustment makes it possible to angle the rear wheel for hillside operation.

Overhead construction of the beam provides good



Illust. 2 — The B-147 for Farmall-B, with hand lift.

clearance for weeds, trash, and cover crops. The disks are attached on the beam by heavy standards and revolve on tapered roller bearings.

Regular Equipment

Hand-lift or power-lift, as ordered. Disks 26-in. diameter, $\frac{3}{8}$ -in. thick, beveled on back. Moldboard scrapers. Double flange steel furrow wheel (rim at center). Three pairs of rear wheel weights.

Special Equipment

Disks 24 x $\frac{3}{8}$ -in., beveled on back. Disks 24 and 26 x $\frac{1}{4}$ -in., beveled on back. Disks 26 x $\frac{1}{4}$ -in. beveled on inside. Notched disks, 24 x $\frac{3}{8}$ -in. Rotary scrapers (for heavy soil).

Furrow wheel for 5.00 x 16-in. or 6.00 x 16-in. pneumatic tire (tire and tube not included). V-tire steel furrow wheel. Sand rim. Three pairs of extra rear wheel weights. Pneumatic Lift-All parts.

Specifications

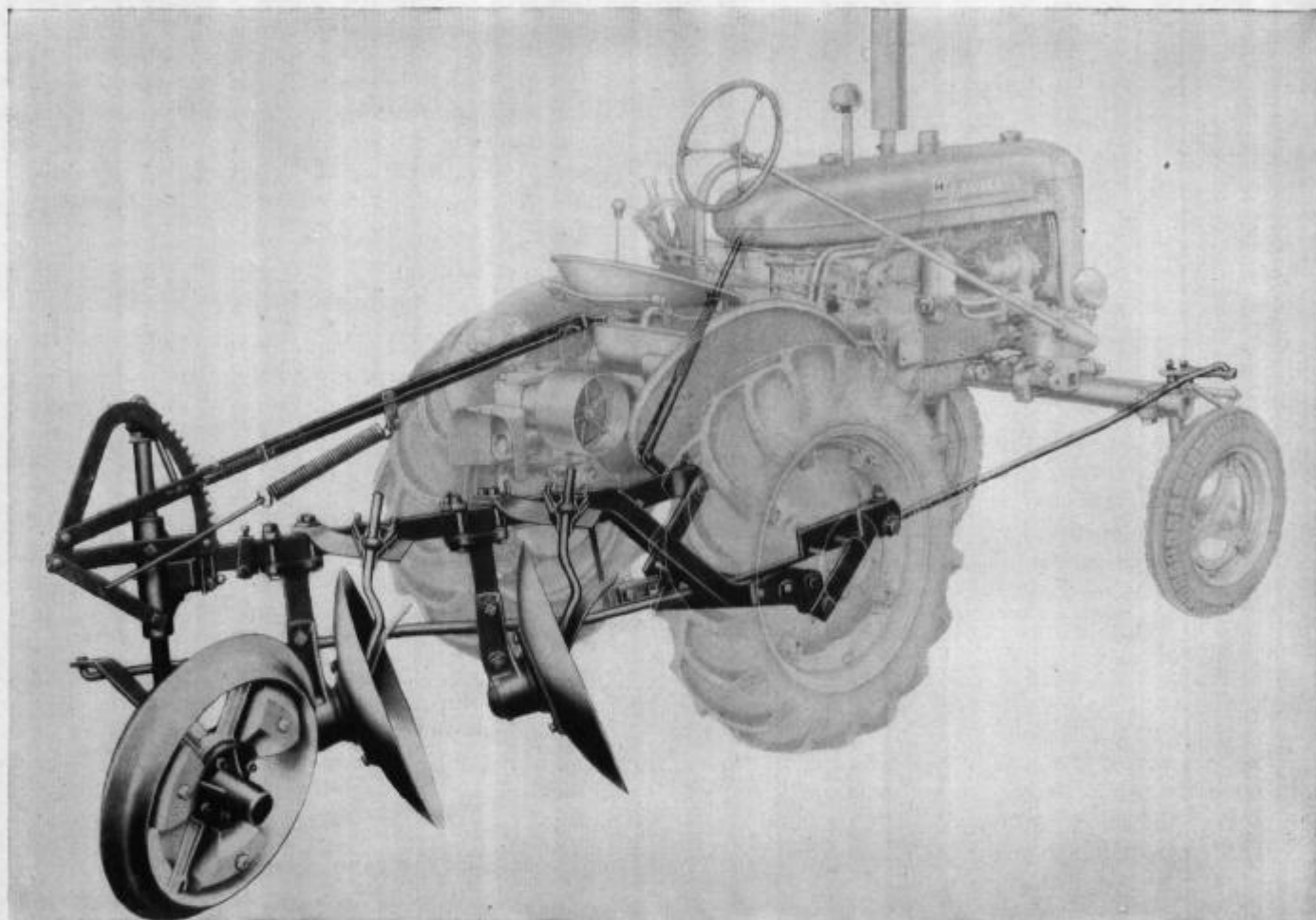
Plow No.	Description	Net Weight (Approx.)
A-147	1-disk, hand lift.....	887 lb.
A-147	2-disk, hand lift.....	1032 lb.
A-147	1-disk, power lift.....	917 lb.
A-147	2-disk, power lift.....	1062 lb.
B-147	1-disk, hand lift.....	893 lb.
B-147	2-disk, hand lift.....	1060 lb.
B-147	1-disk, power lift.....	944 lb.
B-147	2-disk, power lift.....	1087 lb.



Farmall Super-A

A-151 Disk Plow

Rear-Mounted, Two-Disk



Illust. 1 — The A-151, disk plow is a closely-coupled, sturdily built unit especially designed for efficient operation in hard ground and stony and root-infested fields. Three wheel weights are furnished as regular equipment.

- A closely coupled, sturdily built unit.
- Designed for efficient operation in hard, dry ground, in sticky and abrasive soil, and in stony and root-infested fields.
- Disks are heat-treated to withstand hard wear.
- Quickly and easily adjusted.
- Easy to operate.
- Quick-change from one operation to another.
- Farmall Touch-Control for effortless raising and lowering.
- The ideal disk plow for soil conservation work.

Regular Equipment

Two PO-27130 moldboard scrapers. Three POSP-5176 wheel weights. Two PO-12314 disks, 26-in., $\frac{3}{16}$ -in. thick, (beveled on the back). Two POSP-7148 Timken disk bearings.

Special Equipment

POSP-5176 wheel weights.
 PO-12313 Disk, 24-in., $\frac{3}{16}$ -in. thick (beveled on back).
 PO-12586 Disk, 24-in., $\frac{1}{4}$ -in. thick (beveled on back).
 PO-12587 Disk, 26-in., $\frac{1}{4}$ -in. thick (beveled on back).
 PO-21559 Disk, 24-in., $\frac{3}{16}$ -in. thick (beveled on back).
 Furrow wheel for 6.00-16 pneumatic tire (less tire), with four pair of wheel weights.

Specifications

Disk Plow	Universal Units Required	No. Disks	Net Weight (Approx.)
A-151	none	two	939 lb.



Farmall Super-A A-151 Disk Plow

Rear-Mounted, Two-Disk (Continued)



14 to 20-inch Cut

The A-151 is a disk plow with two 26-inch disks which are capable of adjustment to a cutting width of 14-inch minimum to 20-inch maximum. This implement works as an integral unit with the Farmall Super-A tractor.

Adjustable Hitch-Plate

The A-151 is pulled from an equalizing drawbar which is an integral part of the plow. It attaches to the easy-to-reach Tractor Mounting Pads on the rear axle housings. An eccentric bolt in the right-hand hitch plate permits leveling the plow frame.

The rear of the plow is carried by a rear furrow wheel with an adjusting lever attached to the rear axle bracket. The adjustment lever is slightly to the left and within easy reach of the operator. This lever is used for "opening up." It also levels the plow at various operating depths.

Automatic Steering

The steering of the rear furrow wheel is controlled automatically from the tractor by means of a linkage between a guide arm on the furrow wheel axle and a guide arm attached to the right hand front wheel steering knuckle arm of the tractor.

Closely Coupled, Highly Maneuverable

The A-151 two-disk plow is a closely-coupled, sturdily built unit for efficient operation in hard, dry ground, in sticky and abrasive soil, and in stony and root-infested fields. For building and maintaining terraces it is the ideal unit.

The two 26-inch disks are heat-treated to withstand hard wear. Three wheel weights on the rear furrow wheel hold the disks to their work under the toughest soil conditions. A simple set-screw adjustment in the steering linkage makes it easy to change the angle of the furrow wheel. This feature assures cutting a full-width furrow regardless of soil conditions or slope of the land.

Easy to Operate

A-151 equalizing drawbar is more than just a simple pull bar. It is a specially designed torque-tube hitching

device which permits side movement of the plow, without shifting the draft from the center of the tractor. This feature results in a plow and tractor combination that is easy to steer. Shifting of the plow is not transmitted to the tractor, nor is the plow affected immediately when the tractor is turned.

Quick-Change

It is but a matter of minutes to attach the plow to the tractor. Five steps are all that are necessary:

(1) Loosen the bolts on the rear Tractor Mounting Pads.

(2) Slip the drawbar brackets into place on the pads and tighten the bolts.

(3) Raise the drawbar arms and slip the pivot bolts into the bracket slots. (The crosspins on the drawbar arms fit snugly into the "U"-shaped grooves on the underside of the brackets.) Tighten the pivot bolts.

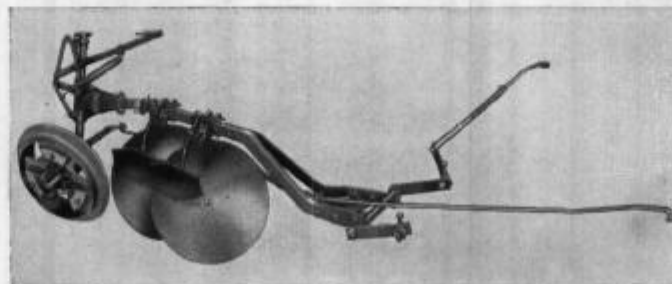
(4) Connect the plow lift arm to the left-hand Farmall Touch-Control arm.

(5) Hook the plow steering linkage to the steering arm knuckle on the tractor. The plow is ready to work.

Detaching for the next operation is just as simple and easy.

Easy to Raise, Lower, Adjust

Farmall Touch-Control raises and lowers the unit. It also controls the plowing depth. An easy-to-reach leveling lever, positioned on the plow just behind the operator, serves to level the beam. This lever can also be used to raise the plow extra high for transport.



Illust. 1 — The A-151 disk plow unit is shown here as it is regularly furnished. There also are available special $\frac{3}{16}$ -inch thick, 24-inch diameter disks. If desired, these disks can be purchased with a notched edge for working in extremely trashy ground.



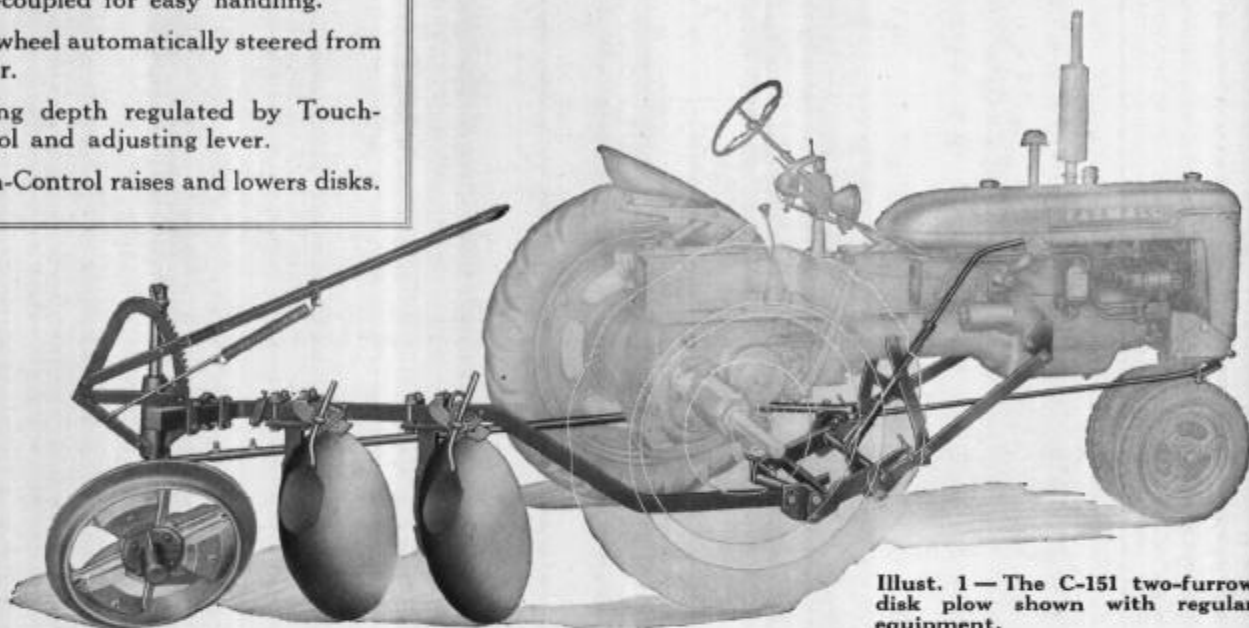
Farmall C

C-151 Disk Plow

Two-Furrow, Rear-Mounted



- Quick-Change.
- Close-coupled for easy handling.
- Rear wheel automatically steered from tractor.
- Plowing depth regulated by Touch-Control and adjusting lever.
- Touch-Control raises and lowers disks.



Illust. 1—The C-151 two-furrow disk plow shown with regular equipment.

The C-151 two-disk plow is a sturdily built, direct-connected unit designed for the Farmall C. It is necessary that the tractor be equipped with the Universal Hitch Frame used also with other rear-connected implements. The C-151 makes an ideal unit for either conventional or contour plowing and for building and maintaining terraces.

The rear of the plow is carried on a furrow wheel connected by linkage to the tractor front wheel bolster so that it casters automatically with the steering of the tractor. An adjusting lever attached to the furrow wheel axle bracket is used for leveling the plow and when opening up fields. The plowing depth is regulated and the disks raised or lowered by Touch-Control. The disks

rotate on dust-proof, precision-built, tapered roller bearings. The disks are adjustable for pitch and width of cut.

Regular Equipment

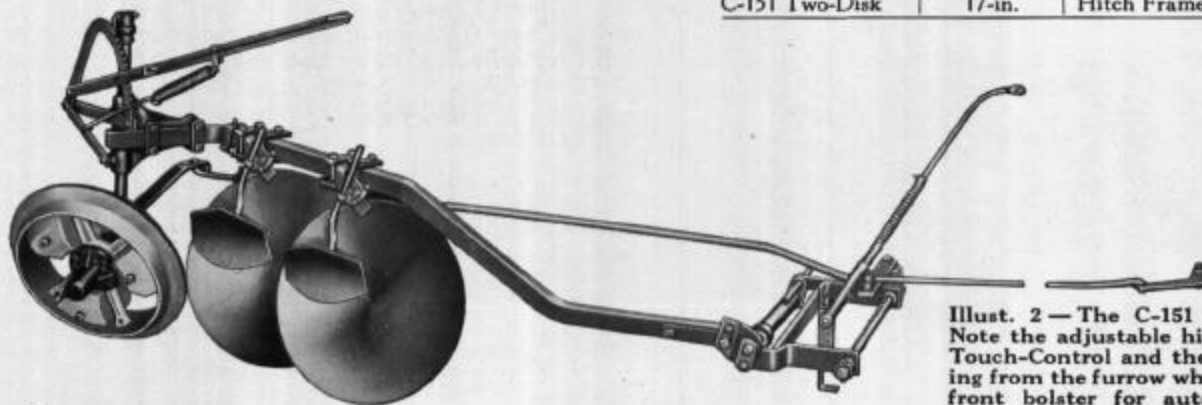
Disks—26-in. dia., $\frac{3}{16}$ -in. thick, beveled on back. Moldboard scrapers. Wheel weights (3). Hitch frame.

Special Equipment

Additional wheel weights. Disks (beveled on back)—24 x $\frac{5}{16}$ -in., 24 x $\frac{1}{4}$ -in., 26 x $\frac{1}{4}$ -in., and (notched) 24 x $\frac{5}{16}$ -in. Furrow wheel for 6.00-16 pneumatic wheel (less tire), with four pair of wheel weights. Parts to adapt plow for tractors with adjustable-tread wide front axle.

Specifications

Plow	Plowing Width (Average)	Universal Unit Required	Net Weight (Approx.)
C-151 Two-Disk	17-in.	Hitch Frame.....	1003 lb.

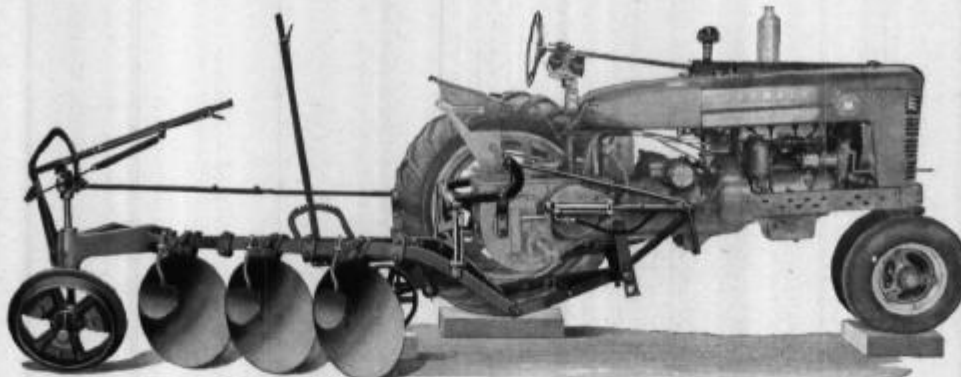


Illust. 2—The C-151 disk plow unit. Note the adjustable hitch regulated by Touch-Control and the linkage extending from the furrow wheel to the tractor front bolster for automatic steering.



HM-150 Disk Plows

(For Farmalls H and M)



Illust. 1 — The HM-150 3-furrow disk plow. The right tractor drive wheel removed here to show full length beam, gauge wheel and hydraulic power lift linkage.

- Close-coupled. Easily handled in any field—ideal for building and maintaining terraces.
- Rear wheel automatically steered from tractor.
- Full-length beam with gauge wheel—accurate, uniform depth control under all conditions.
- Adjustments for depth, leveling, penetration and width of cut.

The HM-150 disk plows are compact, close-coupled machines for high-speed operation in any field. The rear wheel is automatically steered from the front of the tractor, making it easy to follow curving terraces, plow out corners, or back up in tight spots.

The plows are excellent for work in hard, dry ground, in sticky soil, or in stony or root-infested land. They are especially well adapted for building and maintaining terraces, where their pitching action in loose ground makes it possible to speedily move large quantities of dirt to the desired location.

Ample adjustments are provided to adapt the plow to a wide variety of requirements. The gauge wheel, regulated by a convenient lever, holds the plow steady in uneven soils, "sand blows," etc., and the power lift quickly raises the plow for turning at the headlands.



Illust. 2 — HM-150 Farmall disk plow in 2-furrow size.

The rear lever levels the beam and also provides additional lift for transporting the plow on the highway or over rough ground. Simple adjustment on the rear wheel makes it possible to angle the rear wheel for hillside operation.

The disks can be readily tilted for various soil conditions by convenient settings on the heavy disk standards. The disks revolve on precision-type (Timken), tapered roller bearings to assure easy running under different soil conditions.

As special equipment, the axle of the rear furrow wheel can be supplied with precision-type (Timken), tapered roller bearings. Front wheel steering parts are available for adapting this plow to tractor equipped with wide front axle.

Regular Equipment

Power lift only. Disks 26-in. diameter, $\frac{3}{16}$ -in. thick, beveled on back. Moldboard scrapers. Double-flange steel furrow wheel (rim at center); 3 pair wheel weights.

Special Equipment

Disk equipment: Third disk attachment to convert 2-furrow to 3-furrow. Disks 26 x $\frac{1}{4}$ -in., beveled on back. Disks 26 and 28 x $\frac{3}{16}$ -in., beveled on inside. Disks 26 and 28 x $\frac{1}{4}$ -in., beveled on inside. Disks 26 x $\frac{1}{4}$ -in., notched and beveled on back.

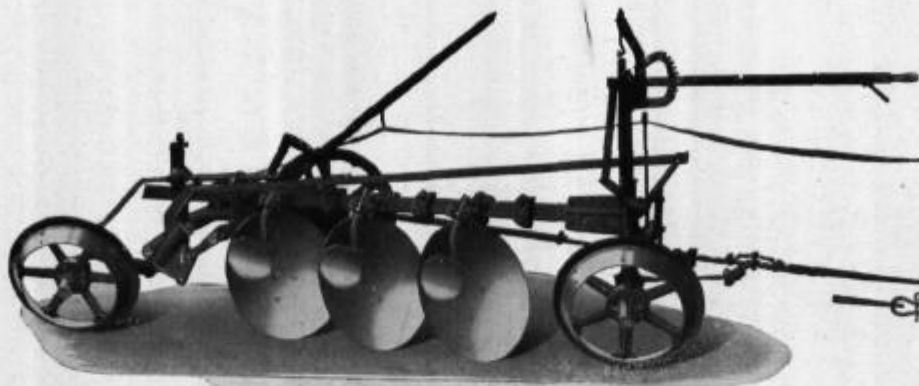
Wheel equipment: Furrow wheel for 6.00 x 16-in. pneumatic tire (tire and tube not included). V-tire steel furrow wheel. Heavy double-flange steel furrow wheel (rim at center). Single-flange steel furrow wheel (rim at side). Wheel weights to fit various wheels; also extra wheel weights.

Specifications

Plow No.	Description	Net Weight (Approx.)
HM-150-2	2-furrow plow	1652 lb.
HM-150-23	2-furrow convertible to 3-furrow	1700 lb.
HM-150-32	3-furrow convertible to 2 furrow	1830 lb.
	Third disk attachment to convert HM-150-23 to HM-150-32	150 lb.



No. 34 Disk Plow



Illust. 1 — The No. 34-3 disk plow. This plow can be increased to a 4-furrow by sliding the rear wheel back and adding another disk.

- Effective distribution of weight holds plow to its work.
- Overhead beam construction for ample clearance in heavy cover crops.
- Disks have tapered roller bearings.

The No. 34 is an intermediate-size disk plow for work under average plowing conditions. Weight intelligently placed, a correctly designed hitch, and the proper location and design of the wheels combine to make a plow which will hold to its work with the disks cutting their full depth and width.

The hitch is of improved design which distributes the plowing strains over the entire plow. The overhead beam construction provides ample clearance in the heaviest cover crops or weeds.

The land wheel, located well toward the rear to hold the plow in line, is of large diameter and has heavy lugs for effective operation of the power lift. Wheel bearings are dustproof, and there is no end wear on the sand bands.

The disks revolve on tapered roller bearings. Heavy, durable spindles and large bearing races assure maximum service. The bearings are completely enclosed against dust. Pressure-type lubrication and felt washers assure trouble-free operation. Two positive pitch settings are provided—the heaviest plowing strains cannot change the pitch of the disks. Hard steel dirt guards protect the bearing caps.

Regular Equipment

Disks 26 x $\frac{3}{16}$ -in. beveled on back. Moldboard scrapers. Set of three weights for rear wheel.

Special Equipment

Disk equipment: 26 x $\frac{3}{16}$ -in. beveled on inside. 24 and 28 x $\frac{3}{16}$ -in. beveled on back or on inside. 24, 26 and 28 x $\frac{1}{4}$ -in. beveled on back or on inside. 26 and 28 x $\frac{1}{4}$ -in. notched disks. Extra disk attachment. 13-in. rotary scrapers. Oscillating scrapers.

Wheel equipment: Heavy land and furrow wheels (POW 429 and 472). 4-in. sand rims. Extra wheel weights for front and rear furrow wheels (96 lb.). Extra wheel weights for land wheel (156 lb.). Spring release hitch. Hitch for crawler tractor.

Specifications

Plow No.	Size	Width Furrows (Inches)	Net Weight (Approx.)
34-2	2-furrow.....	8, 9	1624 lb.
34-32	3-furrow, convertible to 2-furrow.....	7, 8, 9	1754 lb.
34-3	3-furrow.....	7, 8, 9	1794 lb.
34-43	4-furrow, convertible to 3-furrow.....	7, 8, 9	1876 lb.

*With 26 x $\frac{3}{16}$ -in. disks beveled on outside.



Illust. 2 — Oscillating scraper, available on special order. The shank slides up and down in the sleeve of the standard.



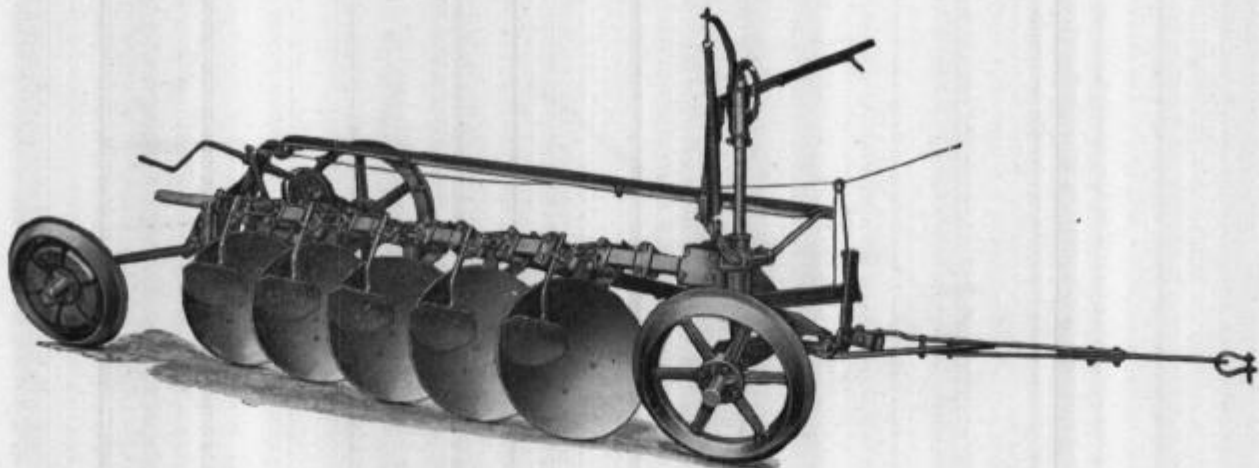
Illust. 3 — 13-in. rotary scraper, sometimes preferred in extremely sticky gumbo. Available when ordered.



Illust. 4 — Spring release hitch, POTH-157 which can be supplied.



No. 98 Heavy Disk Plow



Illust. 1 — No. 98 disk plow. This is the 5-furrow (long-beam) size which can also be converted to a 6 or 7-furrow.

- Strong, overhead beam construction—ample clearance for cover crops.
- Gear-type lift—plow raised on both front and rear land wheels.
- Disks revolve on tapered roller bearings.

The No. 98 is a heavy-duty plow built along slightly lighter lines than the extra-heavy No. 99 shown on the following page. The No. 98 plow has a heavy $2\frac{3}{4}$ -in. overhead main beam, and is built in two beam lengths, a shorter length for 3 to 5 furrows and a longer one for 5 to 7 furrows. Sizes and widths of cut are shown in the Specifications below.

The disks revolve on tapered roller bearings. The spindle portion of the disk bearing is a heavy, steel drop forging. The outer portion of the disk bearing, which is integral with the disk arm, is an extra heavy casting. Heavy, durable spindles and large bearing races assure maximum service. The bearings are completely enclosed against dust. High-pressure lubrication fittings and felt washers assure efficient lubrication.

Two positive pitch settings are provided—the heaviest plowing strains cannot change the pitch of the disks. Hard steel dirt guards protect the bearing caps.

A gear-type raising mechanism is employed, the lift being operated through a pair of 2-to-1 gears. The plow is raised at both the front and rear land wheels. This arrangement minimizes the number of working

parts and the long lift leverage necessary if the plow were raised at only one point.

The depth adjustment on the rear wheel consists of an easy-operating, screw-type crank which gives a fine adjustment. The front end of the plow is raised and lowered by means of a lever and ratchet assisted by a strong helper spring for easy raising.

The overhead beam construction and the trim design of the stub beams provide ample clearance for the passage of earth, trash growth, and heavy cover crops. The hitch controls the front furrow wheel and is of an improved design which distributes the plowing strains over the entire plow.

Regular Equipment

Disks $26 \times \frac{3}{16}$ -in., beveled on inside. Moldboard scrapers. Single-flanged steel wheels. 6 pairs of wheel weights for rear furrow wheel. POTH-174 tractor hitch.

Special Equipment

Disk equipment: 24 or 28-in. $\times \frac{3}{16}$ -in., inside bevel. 24, 26, or 28-in. $\times \frac{1}{4}$ -in., inside bevel. $28 \times \frac{5}{16}$ -in., inside bevel. 26, 28 or $30 \times \frac{1}{4}$ -in., alloy steel, inside bevel. 26 or $28 \times \frac{1}{4}$ -in. notched, beveled on back.

Extra beam attachment. 13-in. rotary scrapers. Oscillating scrapers. 6-in. sand rim for front or rear furrow wheels. 4-in. sand rim for land wheel. Extra wheel weights. Giant button-head lubrication fittings. POTH-183 hitch for crawler tractors. POTH-196 heavy rigid hitch. POTH-127 spring release hitch. POTH-187 spring release hitch for large crawler tractors.

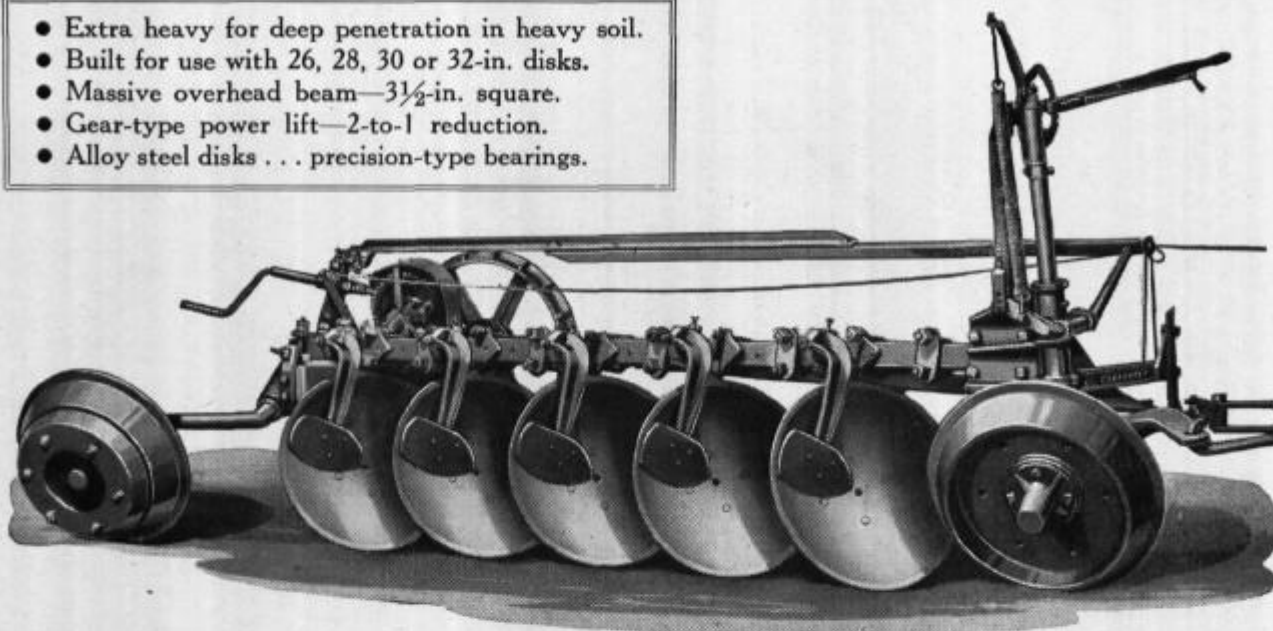
Specifications

Plow No.	Description (With Cutting Widths)	Convertible to (With Cutting Widths)	Net Weight (Approx.)
Short Beam:			
98-3	3-furrow (7, 8 or 9-in.)		2588 lb.
98-43	4-furrow (7, 8 or 9-in.)	3-furrow (7, 8 or 9-in.)	2735 lb.
98-53	5-furrow (7-in.)	4-furrow (7, 8 or 9-in.) or 3-furrow (7, 8 or 9-in.)	2882 lb.
Long Beam:			
98-5	5-furrow (8 or 9-in.)		3013 lb.
98-65	6-furrow (7, 8 or 9-in.)	5-furrow (8 or 9-in.)	3160 lb.
98-75	7-furrow (7 or 8-in.)	6-furrow (7, 8 or 9-in.) or 5-furrow (8 or 9-in.)	3307 lb.



No. 99 Extra-Heavy Disk Plow

- Extra heavy for deep penetration in heavy soil.
- Built for use with 26, 28, 30 or 32-in. disks.
- Massive overhead beam—3½-in. square.
- Gear-type power lift—2-to-1 reduction.
- Alloy steel disks . . . precision-type bearings.



Illust. 1 — No. 99 extra-heavy disk plow. This is the No. 99-54 which is reducible to 4-furrow.



Illust. 2 — Detail of hitch. The front furrow wheel is controlled by the hitch bar. Holes are provided for raising or lowering the hitch plate.

and dirt. High pressure hydraulic fittings are supplied for all bearings and working parts. Giant button-head fittings are available as special equipment. Extra beam attachments can be supplied.

The land wheel is large in diameter and has heavy lugs to avoid slippage. The rear wheel is supplied with heavy wheel weights.

No. 99 disk plows are particularly adapted to work in sugarland and wherever an extremely heavy plow is required. They are designed especially for use with the larger crawler tractors or wheel tractors.

The plows are adjustable to 7, 8, or 9-in. cut and are built on a high frame with steel scraper arms and brackets to accommodate a choice of disks 26, 28, 30, or 32-in. in diameter. High overhead beam construction and spacing between disks provide ample clearance for trash, weeds, and heavy cover crops.

The beam is made of 3½-in. square steel with other parts in proportion. The plow has a gear-type raising mechanism, which operates through a pair of 2-to-1 gears. The clutch wheel or lower gear is driven from the land wheel. A single trip rope gives instant control in raising and lowering the disks.

Heavy-Duty Disks

The disks are made of a special alloy steel for extra toughness and durability and are beveled on the inside to add to their effectiveness in penetrating hard ground. The disks turn on high-grade precision-type roller bearings completely enclosed and protected against dust

Regular Equipment

26 x ¼-in. alloy steel disks, inside bevel. Hydraulic type lubrication fittings and grease gun. Two 250-lb. rear wheel weights.

Special Equipment

Disks: 28, 30 or 32 x ¼-in. alloy steel disks, inside bevel. 32 x 5/16 or 3/8-in. disks. 32 x 3/8-in. disks with 6½-in. concavity, outside bevel.

Wheel equipment: 6-in. sand rims for land wheel and for front or rear furrow wheel. Set of six 60-lb. wheel weights for rear furrow wheel. Extra beam attachment. Giant button-head lubrication fittings.

Specifications

No.	Description	Net Weight* (Approx.)
99-4	4-furrow	4597 lb.
99-54	5-furrow, reducible to 4	4802 lb.
99-5	5-furrow	4824 lb.
99-65	6-furrow, reducible to 5	5129 lb.
99-6	6-furrow	5296 lb.
99-76	7-furrow, reducible to 6	5521 lb.

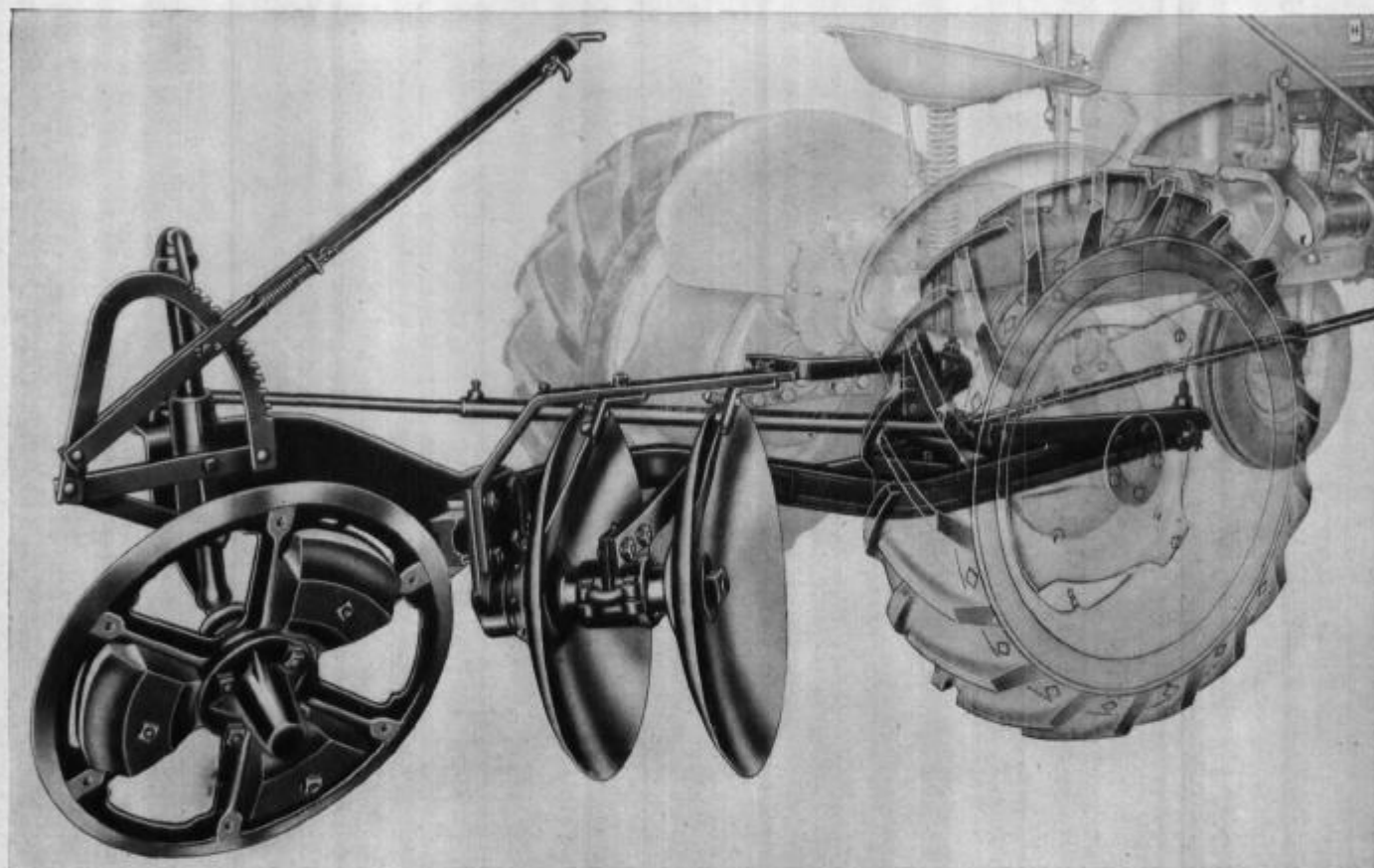
* With 26 x ¼-in. disks, moldboard scrapers and two 250-lb. wheel weights for rear furrow wheel.



Farmall Cub

Cub-12-D Harrow Plow

Rear-Mounted, Two-Disk



Illust. 1 — The Cub-12-D harrow plow, with two 24-inch disks, is designed for shallow plowing. Ideal for working seedbeds in small or irregularly shaped plots.

- A closely-coupled, sturdily built unit for easy handling.
- Rear furrow wheel automatically steered from tractor . . . does not cut corners.
- Heat-treated disks for wear resistance.
- Easy to operate and to adjust.
- Quickly attached and detached.
- Ideal for the small-acreage farm and for soil conservation.
- Farmall Touch-Control or manual control.

Regular Equipment

Two 24-in. disks spaced 10 inches apart. Three wheel weights. Scrapers.

Special Equipment

Furrow-wheel sand rim (4-in.) with bolts. Extra wheel weights.

Specifications

Harrow- Plow No.	UNIVERSAL UNITS REQUIRED		No. of Disks	Net Weights (Approx.)
	Touch-Control	Manual Control		
Cub-12-D	None	No. 511 893 R92 Raising Lever and Rear Rockshaft	2	611 lb.
		No. 511 894 R91 Front Rockshaft		



Farmall Cub
Cub-12-D Harrow Plow
Rear-Mounted, Two-Disk



15-Inch Cut

The Cub-12-D rear-mounted harrow plow is equipped with two 24-inch disks, spaced 10 inches apart, which make a combined cut of 15 inches. This implement works in unison with the Farmall Cub tractor. The principal difference between this and the Cub-151 disk plow is the Cub-12-D is designed for shallow plowing and hence, is able to cover more ground per day than the deeper working disk plow. The disks are heat-treated for toughness and mounted on chilled, extremely-hard cast-iron bearings.

The Cub-12-D is designed for tilling and shallow plowing and will do an excellent job of soil pulverizing. The disks are carried on an overhead, heavy, square steel bar with ample clearance for turning under heavy growths. These plows will work in every type of soil and are the ideal plows for the preparation of well-worked seedbeds in small or irregularly-shaped plots. They will cling to hillsides and are excellent for building and maintaining terraces.

Easy to Operate

The steering of the rear furrow wheel is controlled by means of a linkage between a guide arm on the furrow wheel axle and a guide arm attached to the tractor right-hand, front-wheel steering knuckle. This automatic steering feature permits the operator to plow in tight spots without cutting corners.

The rear of the plow is carried by a rear furrow wheel with an adjusting lever attached to the rear axle bracket. The adjustment lever is slightly to the left and within easy reach of the operator. This lever is used for "opening up." It also levels the disks fore and aft when plowing at varying depths.

Three wheel weights hold the disks to their work under the toughest soil conditions. A simple set-screw adjustment in the steering linkage makes it easy to change the angle of the furrow wheel. This feature assures cutting a full-width furrow regardless of soil conditions or slope of the land.

Equalizing Drawbar for Easy Steering

The Cub-12-D equalizing drawbar, which is an integral part of the plow, is much more than just a simple pullbar. It is a specially designed hitching device which permits side movement of the plow, without shifting the draft from the center of the tractor. This feature results in a plow and tractor combination that is easy to steer. Shifting of the plow is not transmitted to the tractor, nor is the plow affected immediately when the tractor is turned. An adjusting bolt is provided in the right-hand hitch plate which permits leveling the plow frame.

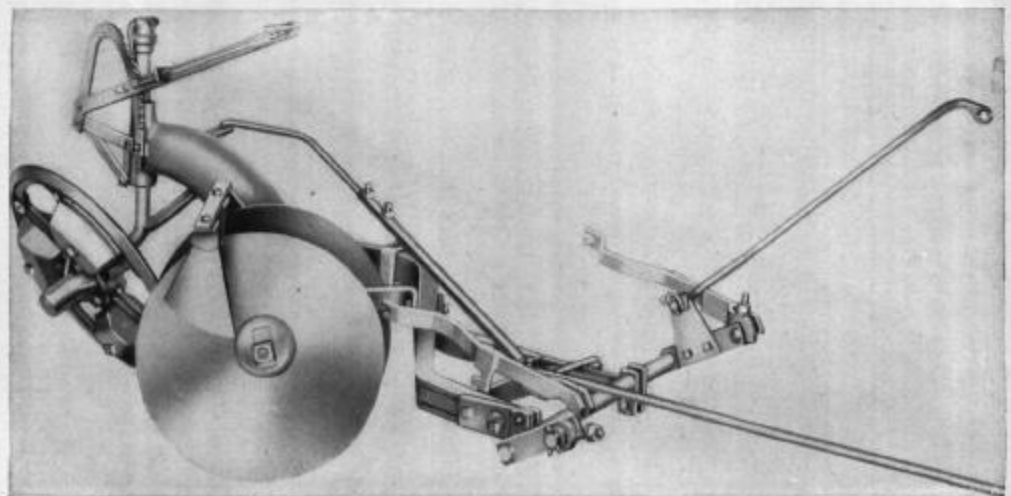
Quick-Change Attached

It is but a matter of minutes to attach the plow to the tractor. Only five simple steps are necessary. Connection is made to the rear mounting pads of the tractor with the plow lift arm attached to either the manual control front rockshaft or the Touch-Control arms. The plow steering linkage is hooked to the tractor steering arm.

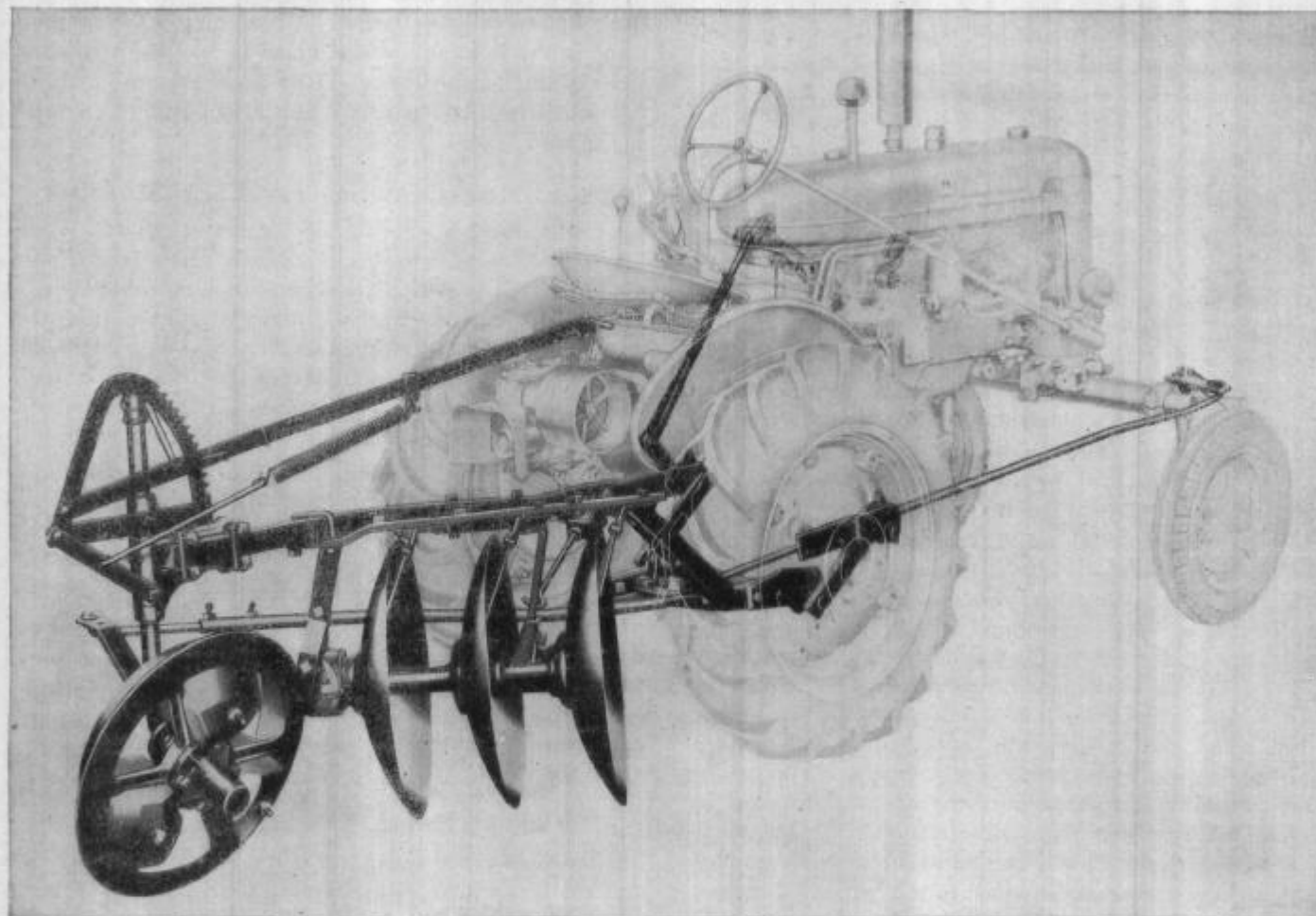
Easy to Raise, Lower, and Adjust

The disks are lowered and raised for turning either by a manual control or by hydraulic Touch-Control. Depth of plowing is controlled similarly. An easy-to-reach leveling lever, positioned on the plow just behind the operator, serves to level the beam. It can also be used to raise the plow extra high for transporting.

Illust. 2—The Cub-12-D harrow plow removed from the tractor showing the equalizing hitch together with the special adjustment in the right-hand drawbar hitch plate, for leveling the plow beam laterally.



Farmall Super-A
A-12-D Harrow Plow
 Rear-Mounted, Three-Disk



Illust. 1 — The A-12-D harrow plow, with three 26-inch disks, is a closely coupled unit designed to achieve maximum maneuverability. Three wheel weights are furnished as regular equipment. Twenty-four inch disks are also available when ordered.

- A closely coupled, sturdily built unit.
- Disks are specially heat-treated to withstand hard wear.
- Easy to operate.
- Quick-change—easily attached and detached.
- Farmall Touch-Control for effortless raising and lowering.
- Quickly and easily adjusted.
- An ideal harrow plow for soil conservation work.
- Highly maneuverable.

Regular Equipment

Three CP-15539 26-in. disks. Three POSP-5176 wheel weights.

Special Equipment

POSP-5176 wheel weights. 24-in. disks. Furrow wheel for 6.00-16 pneumatic tire (less tire), with four pair of wheel weights.

Specifications

Harrow Plow	Universal Units Required	No. Disks	Net Weight (Approx.)
A-12-D	none	3	927 lb.





A-12-D Harrow Plow

Rear-Mounted, Three-Disk (Continued)

22-inch Cut

The A-12-D rear-mounted harrow-plow accommodates three 26-inch disks which are spaced 10 inches apart making possible an average width cut of 22 inches. This implement works as an integral unit with the Farmall Super-A tractor.

Equalizing Drawbar

The A-12-D is pulled from an equalizing drawbar which attaches to the Tractor Mounting Pads on the rear axle housings. An eccentric adjusting bolt is provided in the right-hand hitch plate which permits leveling the plow frame.

The rear of the plow is carried by a rear furrow wheel with an adjusting lever attached to the rear axle bracket. The adjustment lever is slightly to the left and within easy reach of the operator. This lever is used for "opening up." It also levels the disks fore and aft when plowing at varying depths.

The steering of the rear furrow wheel is controlled by means of a linkage between a guide arm on the furrow wheel axle and a guide arm attached to the tractor right-hand front wheel steering knuckle.

Closely Coupled — Sturdily Built

The A-12-D Harrow Plow is a closely coupled, sturdily built unit specially designed for efficient operation in hard, dry ground, in sticky and abrasive soil, and in stony and root-infested fields. It is easily maneuvered into tight corners and difficult spots where larger equipment cannot go. It is the ideal unit for terracing and terrace maintenance.

Automatic Steering

The 26-inch disks are heat-treated to withstand hard wear and cut a furrow with an average width of 22 inches. The furrow wheel, connected to the tractor steering linkage, is automatically steered from the tractor seat. Three wheel weights hold the disks to their work under the toughest soil conditions. A

simple set-screw adjustment in the steering linkage makes it easy to change the angle of the furrow wheel. This feature assures cutting a full-width furrow regardless of soil conditions or slope of the land.

Easy to Operate

The A-12-D equalizing torque tube drawbar, which is an integral part of the plow, is more than just a simple pull bar. It is a specially designed hitching device which permits side movement of the plow, without shifting the draft from the center of the tractor. This feature results in a plow and tractor combination that is easy to steer. Shifting of the plow is not transmitted to the tractor, nor is the plow affected immediately when the tractor is turned.

Quick-Attach for Quick-Change

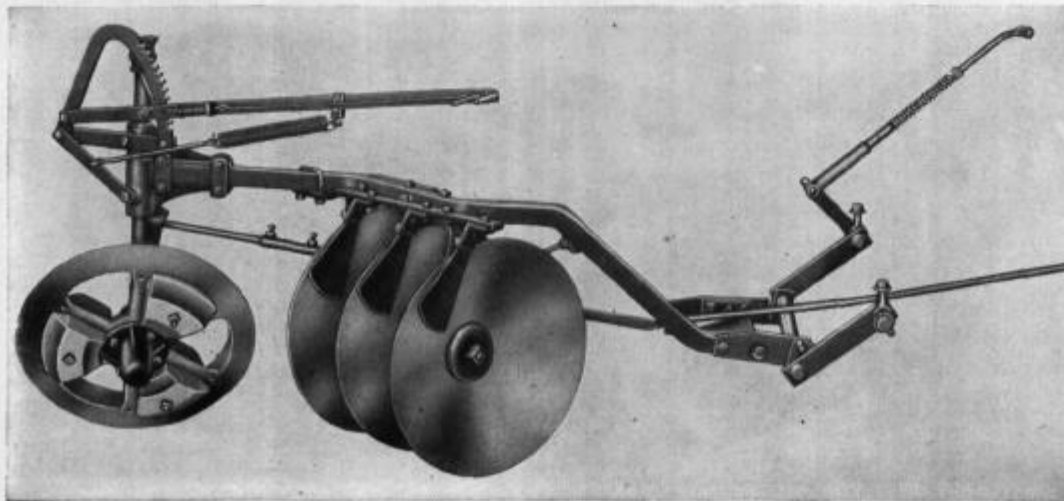
It is but a matter of minutes to attach the plow to the tractor. Five steps are all that are necessary:

- (1) Loosen the bolts on the rear Tractor Mounting Pads.
- (2) Slip the plow brackets into place on the pads and tighten the bolts.
- (3) Raise the drawbar arms and slip the pivot bolts into the bracket slots. The crosspins on the drawbar arms fit snugly into the "U"-shaped grooves on the underside of the brackets. Tighten the pivot bolts.
- (4) Connect the plow lift arm to the left-hand Farmall Touch-Control arm.
- (5) Hook the plow steering linkage to the tractor steering knuckle arm. The plow is ready to work.

Detaching for the next operation is just as simple and easy.

Easy to Raise, Lower and Adjust

Farmall Touch-Control raises and lowers the unit. It also controls the plowing depth. An easy-to-reach leveling lever, positioned on the plow just behind the operator, serves to level the beam. It also can be used to raise the plow extra high for transport.



Illust. 1 — The A-12-D harrow plow unit is shown here removed from the tractor. Note the special equalizing torque tube drawbar. This drawbar keeps the line of draft centered on the line of pull — no side draft.



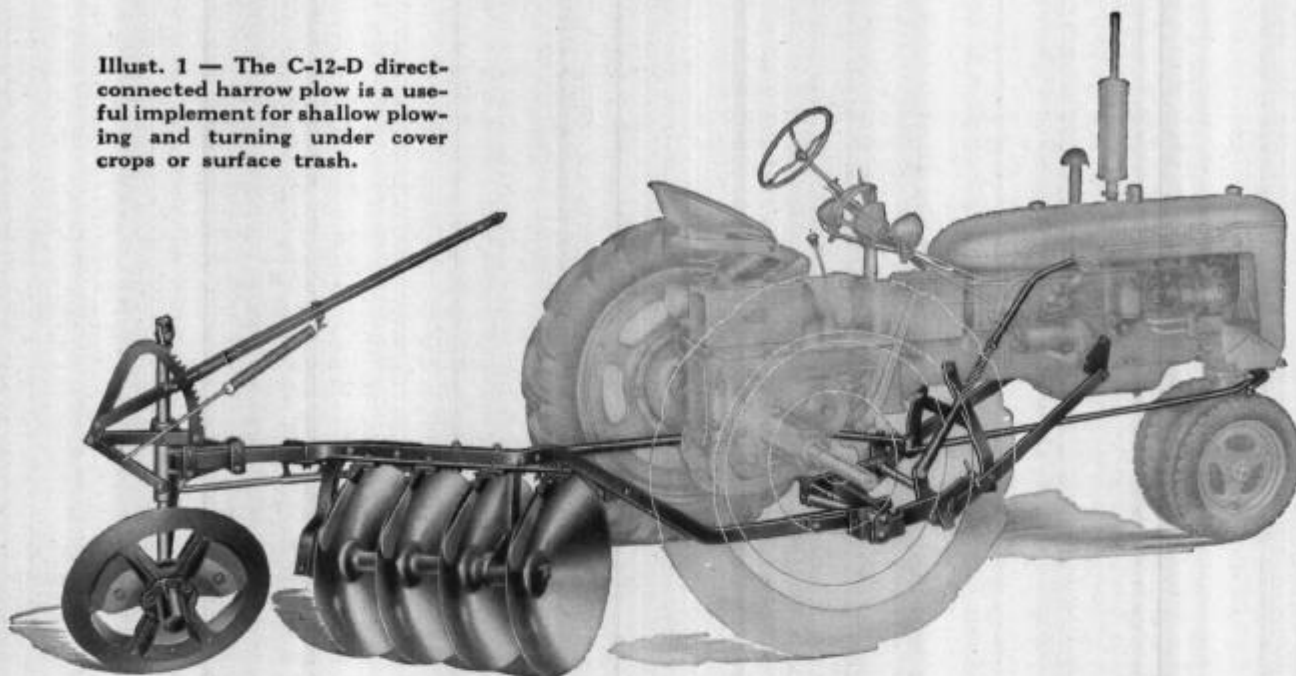
Farmall C

C-12-D Harrow Plow

Four-Disk, Rear-Mounted



Illust. 1 — The C-12-D direct-connected harrow plow is a useful implement for shallow plowing and turning under cover crops or surface trash.



- Close-coupled for easy handling.
- Quickly attached and detached.
- Rear furrow wheel automatically steered from tractor.
- Plowing depth regulated by Touch-Control.
- Convenient hand lever for leveling plow.

Regular Equipment

Heat-treated disks, 26-in. dia. Blade scrapers. Wheel weights (3). Hitch frame.

Special Equipment

Disks, 24-in. dia. Additional wheel weights. Furrow wheel for 6.00-16 pneumatic wheel (less tire), and four pair of wheel weights. Parts to adapt plow for tractors with adjustable-tread wide front axle.

Specifications

Description	No. of Disks	Cutting Width (Average)	Net Weight (Approx.)
C-12-D Harrow-Plow.....	4	30-in.	1084 lb.

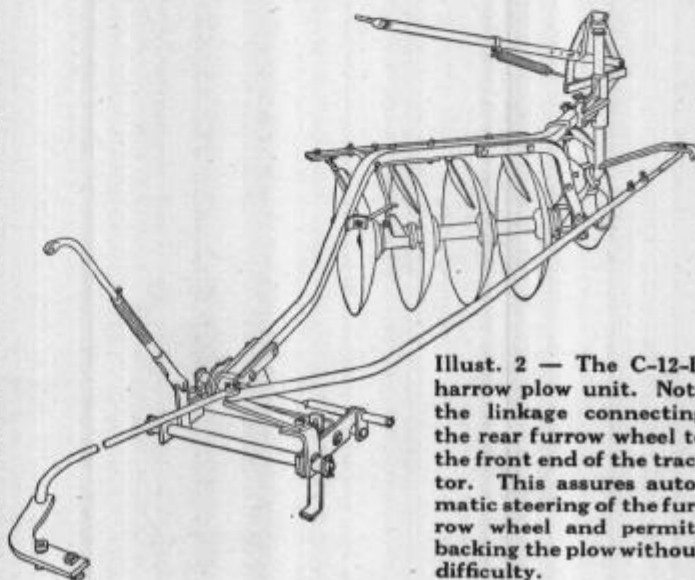
The C-12-D is a four-disk, direct-connected harrow plow designed for the Farmall C.

The C-12-D is designed for tilling and shallow plowing and will do an excellent job of soil pulverizing. The disks are carried on an overhead, heavy square steel bar with ample clearance for turning under heavy growths.

The rear of the plow is carried on a heavy V-tire furrow wheel connected by linkage to the tractor front wheel bolster so that it is guided in unison with the steering of the tractor. This also enables the plow to be backed and maneuvered into "tight spots" and to trail without cutting corners when plowing on the contour.

The disks are lowered and raised out of the ground for turning and the plowing depth is regulated by Touch-Control. In addition, a convenient lever is provided for leveling the rear end of the plow. It is also used when "opening up" fields or when the disks are to be raised high for transport.

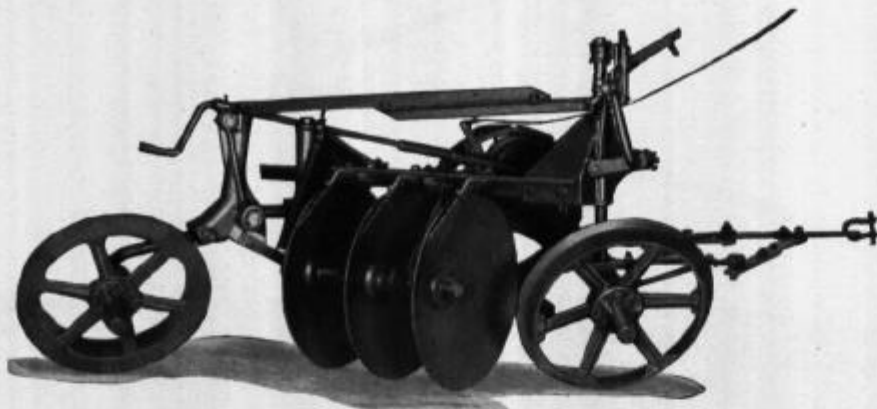
The disks are heat-treated and are spaced 10 inches apart on an arbor bolt, giving an average total cutting width of 30 inches.



Illust. 2 — The C-12-D harrow plow unit. Note the linkage connecting the rear furrow wheel to the front end of the tractor. This assures automatic steering of the furrow wheel and permits backing the plow without difficulty.



Nos. 7 and 8 Harrow-Plows



Illust. 1 — The No. 8 harrow-plow. It comes in 3 and 4-disk sizes and has $10\frac{11}{16}$ -in. spacings. The No. 7, which comes in 5 and 6-disk sizes, has 8-in. spacings.

Nos. 7 and 8 harrow-plows are designed to operate behind the smaller sizes of tractors. The construction of these machines is extremely sturdy, and while they do not cut as many furrows as the larger harrow-plows, they cut them just as wide and just as deep. They will go into stalks or cover crops and do a real job of soil pulverizing and covering. The disks are carried on an overhead, heavy square steel bar, which gives the good clearance necessary when turning under heavy growths.

The power-lift device on the front axle is controlled by a trip rope, and has a 2-to-1 gearing for positive lift under adverse conditions. The disks are carried well above the ground in turning and transporting.

An adjusting lever assisted by a strong counterbalancing spring is provided for raising and lowering the front end of the harrow-plow. It can be operated conveniently from the seat of the tractor. A screw crank provides means for changing the penetration to suit soft or hard ground conditions. An adjustment in the rear axle bracket permits setting the rear wheel to lead slightly away from the furrow wall to counteract the landward thrust of the disks.

The rear wheel casters naturally—there is no dragging on the turns. The hitch has ample lateral adjustment. The hitch also controls the casting of the front furrow wheel in turning.

Disks on the No. 7 are spaced at 8 inches, on the No. 8 at $10\frac{11}{16}$ inches.

Regular Equipment

Plain heat-treated disks as shown in Specifications. With or without blade-type scrapers, as ordered. Three pairs of PO-1038 wheel weights for rear furrow wheel.

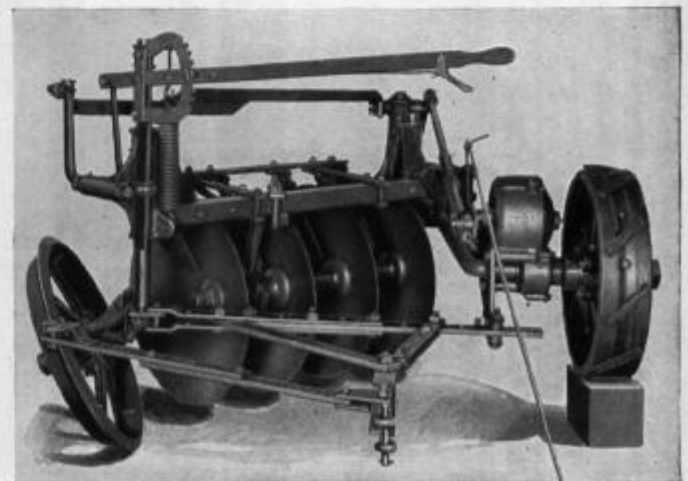
- Sturdy, easy-handling plows for use with small tractors.
- Overhead beam construction for good clearance.
- Power lift with 2-to-1 gear ratio.

Special Equipment

20-in. No. 7 gauge heat-treated disks for No. 7. Alloy steel disks—20 and 22-in. for No. 7; 24 and 26-in. for No. 8. Notched, heat-treated disks—20 and 22-in. for No. 7; 24 and 26-in. for No. 8. Wheels for 5.50 or 6.00 x 16 pneumatic tire (less tires and tubes). Sand rims. Wheel weights.

Specifications

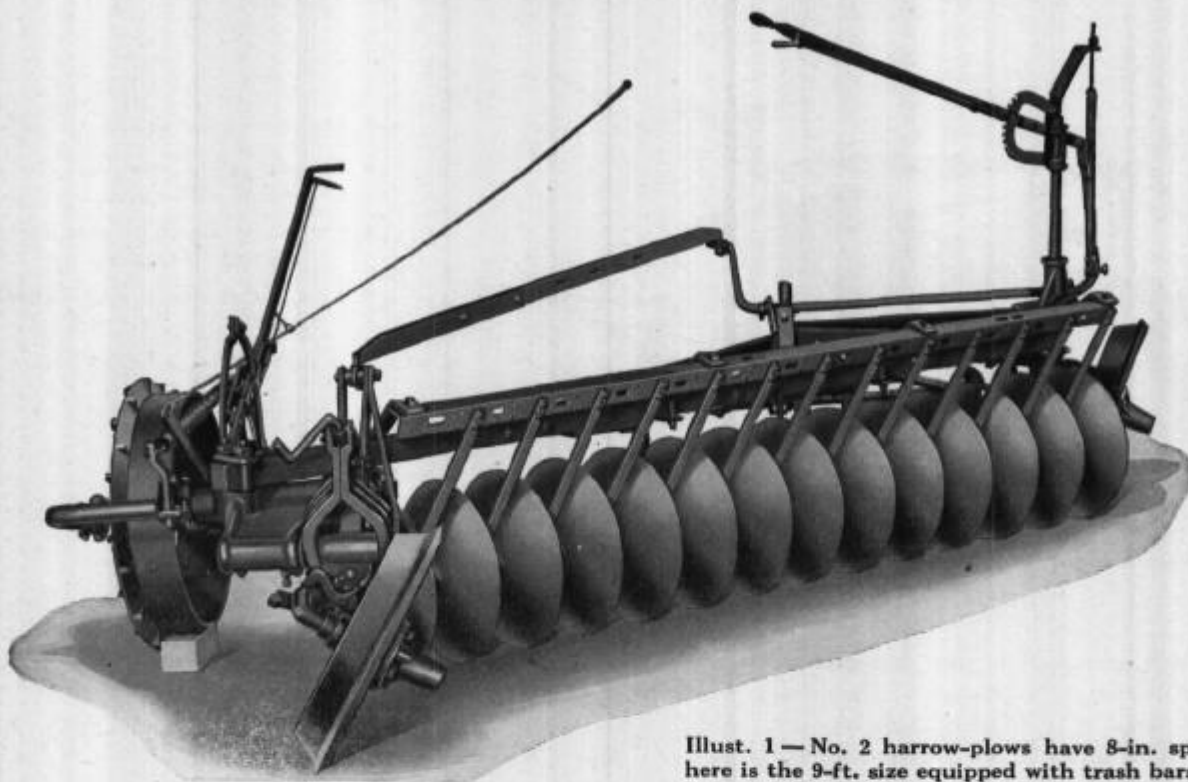
Plow No.	No. Disks	Size Disks	Width Cut—In.	Net Weight (Approx.)
7	5	20-in., No. 9 ga.	28-32	1290 lb.
7	5	22-in., No. 7 ga.	28-32	1305 lb.
7	6	20-in., No. 9 ga.	34-39	1450 lb.
7	6	22-in., No. 7 ga.	34-39	1465 lb.
8	3	24-in.	22-26	1230 lb.
8	3	26-in.	22-26	1240 lb.
8	4	24-in.	30-34	1286 lb.
8	4	26-in.	30-34	1296 lb.



Illust. 2 — Front view of No. 8 showing the 2-to-1 power lift device and hitch, which controls the caster of the front furrow wheel.



Nos. 2 and 3 Harrow-Plows



Illust. 1 — No. 2 harrow-plows have 8-in. spacing. Shown here is the 9-ft. size equipped with trash bars (regular).

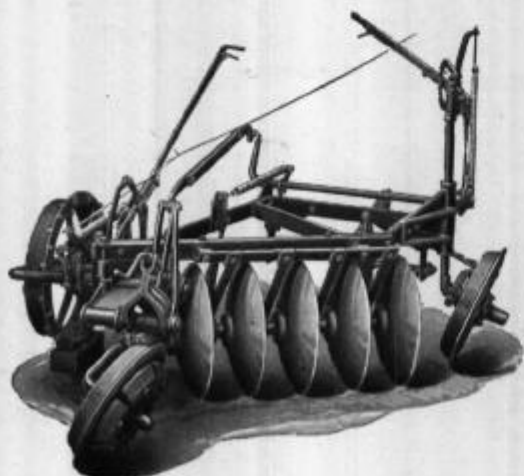
- Easy-handling plows for preparing wheat land and for working fallow ground.
- Sizes and equipment for every requirement—disks from 20 to 26-in. . . spacings in 8 or 10-in. . . eccentric disks for pit plowing.

Nos. 2 and 3 harrow-plows are used extensively in the preparation of ground for wheat, particularly where the harvester-thresher is used. They cut all surface

growth clean, and are excellent for fallow ground, keeping the surface well mulched. The disks are arranged on arbor bolts of disk harrow type but throw the soil one way only. Like a disk plow the harrow-plow is held to its work by canted furrow wheels, proper distribution of weight, and a specially designed hitch.

The angle of the disks can be changed from 36 to 45 degrees. The adjustment is very simple and adds greatly to the ability of the harrow-plow to meet varying conditions. Easy means are provided for regulating the depth, leveling the plow, and adjusting the rear end.

The No. 2 harrow-plow is built in 4, 5, 6, 8, and 9-ft. sizes with 20-in. disks spaced 8-in. apart. The No. 3



Illust. 2 — No. 3 harrow-plows have 10-in. spacing. This is the 5-ft.

Specifications — (Regular Disks)

Harrow-Plow No.	Size	No. and Diameter of Disks	Net Weight (Approx.)
2	4-ft.	7 20-in.	2073 lb.
2	5-ft.	8 20-in.	2173 lb.
2	6-ft.	10 20-in.	2213 lb.
2	8-ft.	12 20-in.	2453 lb.
2	9-ft.	14 20-in.	2518 lb.
3	4-ft.	5 24-in.	2274 lb.
3	6-ft.	8 24-in.	2542 lb.
3	7-ft.	9 24-in.	2663 lb.
3	9-ft.	12 24-in.	2989 lb.
3	4-ft.	5 26-in.	2304 lb.
3	6-ft.	8 26-in.	2590 lb.
3	7-ft.	9 26-in.	2717 lb.
3	9-ft.	12 26-in.	3061 lb.



Nos. 2 and 3 Harrow-Plows

(Continued)

comes in 4, 6, 7 and 9-ft. sizes and can be had with either 24 or 26-in. disks spaced 10 in. apart.

The backbone of the harrow-plow is a heavy, square, steel beam located above the disks to give maximum clearance over the disks. The land wheel is extra large and rolls easily over loose, rough ground. In turning, the front furrow wheel is automatically castered in the natural line of travel—it is impossible to drag it sidewise. The power lift operates on all three wheels, giving a high level lift. A dust-proof housing protects the clutch.

Regular Equipment

Disks as shown in Specifications—No. 9-gauge for the No. 2; $\frac{3}{16}$ -in. for the No. 3 with or without trash bars, as ordered. Also full blade scrapers in lieu of trash bars, when ordered.

Sand rim for land wheel. Six pairs of rear wheel weights. Tractor hitch.

Special Equipment

Disks: No. 7-gauge, 20-in. or 22-in. for the No. 2. Notched disks for the No. 3. Pit-plowing (eccentric) disks as shown in Specifications. Malleable spools.

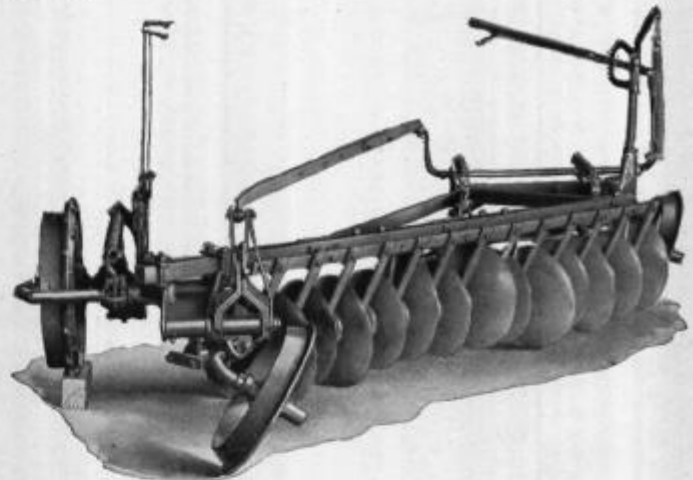
Land and front and rear furrow wheels for 16-in. pneumatic tires (less tires and tubes). Flanged land wheel. Wheels with roller bearings. Alloy steel axles for front furrow and land wheels. 4-in. sand rim for furrow wheel. Extra wheel weights. Cushion spring hitch. Tandem hitches for pulling 2, 3 and 4 harrow-plows.

Eccentric Disks for Pit Plowing to Conserve Moisture

These harrow-plows can also be equipped with eccentric disks for pit plowing. Every alternate disk has the hole 2 inches off center, separated by regular "on-center" disks which are one size smaller (2 inches) in diameter.

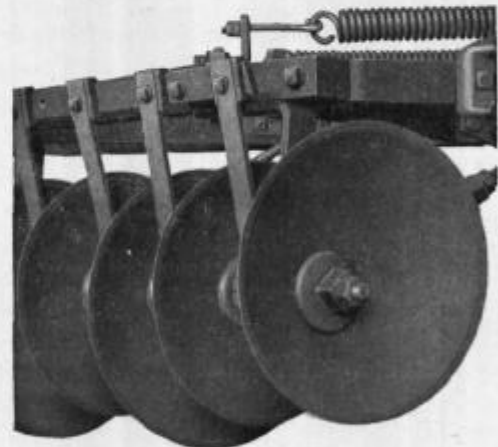


Illust. 1 — Full-blade scrapers which are supplied when ordered.



Illust. 2 — The 9-ft. No. 2 harrow-plow equipped with eccentric disks.

The eccentric disks are arranged spirally so that only every fourth eccentric disk is cutting its full depth at any time. These disks cut about three inches deeper than the smaller ones, leaving the surface of the soil pitted—6,000 and 7,000 pits to the acre.



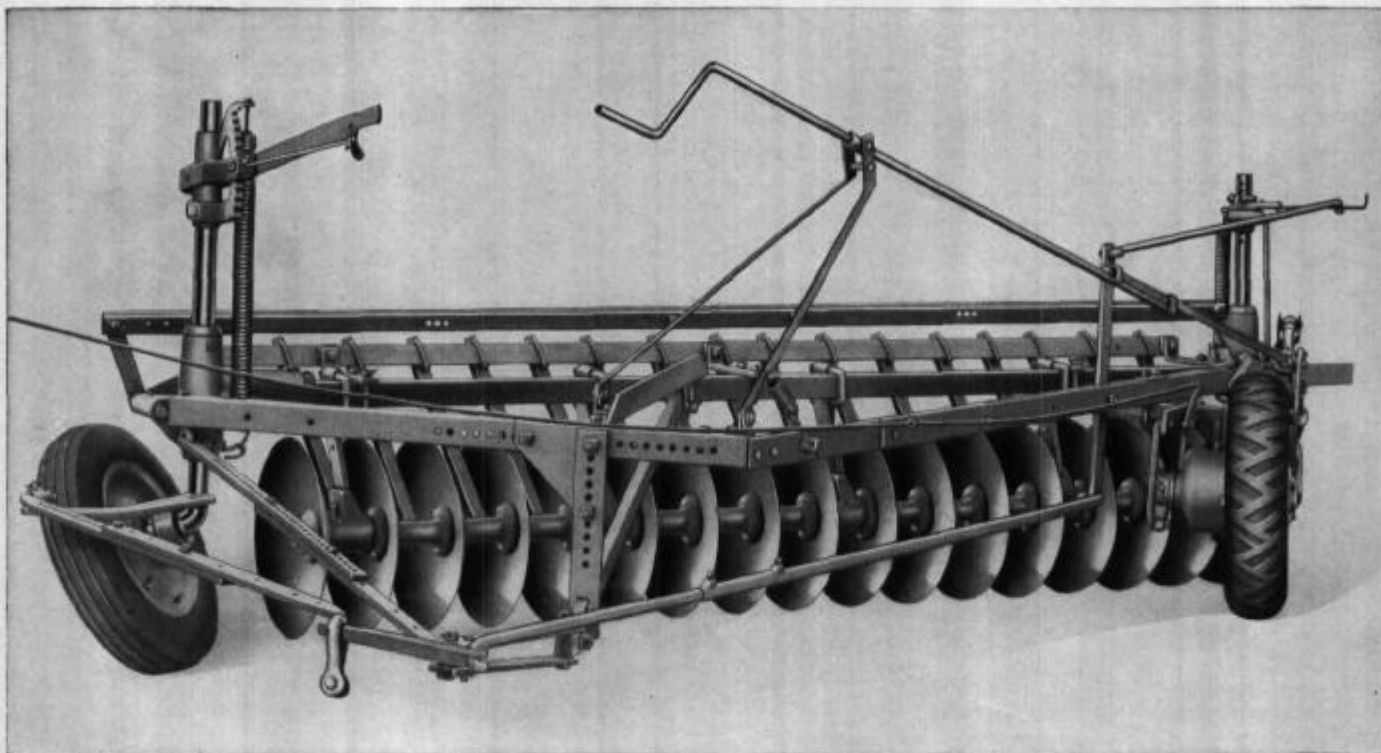
Illust. 3 — Detail showing arrangement of eccentric disks.

Specifications — (Eccentric Disks*)

No.	Size	No. Disks (Total)	No. and Diameter of Disks		Net Weight (Approx.) Lb.
			Plain	Eccentric	
2	4-ft.	7	4 18-in.	3 20-in.	1880
2	5-ft.	8	4 18-in.	4 20-in.	1965
2	6-ft.	10	5 18-in.	5 20-in.	2020
2	8-ft.	12	6 18-in.	6 20-in.	2228
2	9-ft.	14	7 18-in.	7 20-in.	2283
3	6-ft.	8	4 20-in.	4 22-in.	2425
3	7-ft.	10	5 20-in.	5 22-in.	2541
3	9-ft.	12	6 20-in.	6 22-in.	2857

*The 4-ft. No. 3 is not supplied with eccentric disks.

Nos. 10 and 11 Harrow-Plows



Illust. 1 — Front view of the 11 C-17. The rear disk cuts out the land wheel track, permitting the machine to work the soil within 13 inches of fences and right up to standing crops. Front and rear furrow wheels are connected to the hitch bar and follow direction of the tractor.

- Plow close to fences and growing crops . . . no wide untilled rows for weed growth.
- Hold to their work . . . no skidding or dragging.
- No turnbuckles or braces to catch trash.
- Rugged construction for outstanding performance at high tractor speeds and in tough soil conditions . . . rigid arbor bolts, heavy furrow wheel axles, and strong square steel main beam.
- Adjustable cutting width and disk angle for all working conditions.
- Quick-acting, enclosed 2 to 1 gear ratio power lift runs in oil . . . dependable and long-wearing.

The Nos. 10 and 11 harrow-plows are ruggedly built for high-speed tractor work and are particularly adapted to wheat areas where a harvester-thresher is used. The No. 10 machines have a medium-weight frame and are available in a variety of sizes. The No. 11 harrow-plows are basically the same in design and operation as the No. 10 machines but have a heavier frame and provide larger cutting widths.

These harrow-plows do an excellent job of surface tillage from 4 to 6 inches deep and leave the stubble ends projecting above the surface to retard soil drifting and conserve moisture. The ground is left comparatively level, making it easier to operate a binder or harvester-thresher. Wide cutting widths ranging from 57 to 115 inches, plus operation at high tractor speeds, enable these machines to work larger acreages — reducing the time required to prepare wheat ground.

Specifications (For one-section disk gang harrow plows)

No.	Disk Spacing (inches)	No. of Disks	Disk Diameter (inches)	Cutting Width (inches)	Net Weight (Approx.)
10 C-10	8	10	22	57, 62 and 66	2,402 lb.
10 C-12	8	12	22	68, 74 and 79	2,576 lb.
11 C-15	8	15	22	85, 92 and 99	3,161 lb.
11 C-17	8	17	22	96, 104 and 112	3,363 lb.
10 D-8	10	8	26	56, 61 and 66	2,419 lb.
10 D-10	10	10	26	71, 77 and 83	2,622 lb.
11 D-12	10	12	26	85, 92 and 99	3,192 lb.
11 D-14	10	14	26	99, 107 and 115	3,424 lb.



Nos. 10 and 11 Harrow-Plows

(Continued)

Plow Close to Fences and Growing Crops

The inside disk cuts into the land wheel track, permitting the harrow to work the soil within 13 inches of any fence or obstruction, and to plow right up to a standing crop—a factor of importance in strip farming and wherever it is desirable to work every available inch of soil. No wide strip of untilled soil will be left for weeds to grow and infest the entire field.

Easy to Control

The specially designed hitch causes the disks to follow the direction of the tractor without skidding or dragging. Proper distribution of weight on all three wheels prevents drag and causes all disks to work the soil. The furrow wheels are canted against the pull of the disks and hold the machine in its original direction.

The front and rear furrow wheels are connected by linkage to the hitch point and are automatically turned to follow the direction of the tractor. This permits short turns without skidding and dragging. The hitch is adjustable from side to side to suit either wheel-type or crawler tractors. Vertical adjustment permits lower positions for hard soil and higher positions for easier plowing conditions. The extra large land wheel is carried in a roller and ball-bearing assembly and rolls easily over loose, rough ground.

Rugged Arbor Bolt Eliminates Disk Breakage

The rigid, continuous arbor bolt is heavy $1\frac{1}{4}$ -inch square steel and will not stretch as a result of heavy work. This feature keeps the disks and heavy spreader spools fitted tightly together and prevents them from loosening and eventually breaking. As a result of this heavy construction, no turnbuckles or other supports are required in front of the disks, thereby eliminating trash-catching hazards. A two-section gang, which permits temporary removal of some disks to achieve narrower cutting widths, is available on special order.

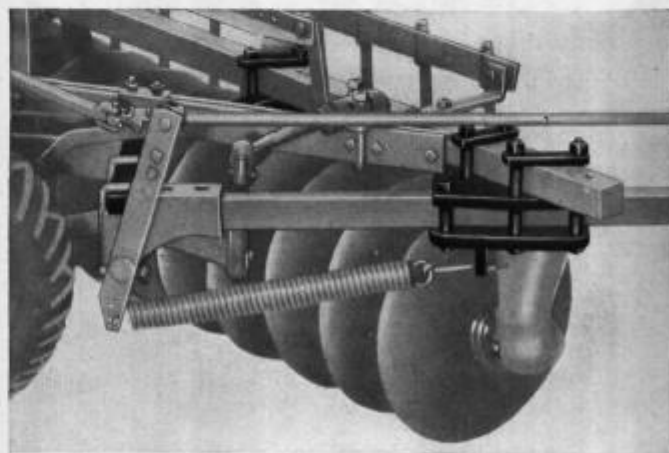
Long-Wearing Bearings

The disk gang is suspended from the heavy $2\frac{3}{4}$ -inch square steel main beam and rotates on five long-wearing bearings. A replaceable, hard iron self-aligning thrust bearing at the rear of the disk gang takes up the thrust.

Four forward bearings of hard iron, contained in share-iron housings which are suspended from the main beam, assure years of dependable service.

Easy-to-Make Adjustments

The cutting width of the machine and the angle of the disks can be changed very easily to any one of three settings while the machine is attached to the tractor. A wide angle is desirable in working loose soil or where it is desired to throw soil a greater distance. A narrow angle is desirable in hard soil or where little throw is wanted. A worm-type depth regulator located above the rear furrow wheel controls the penetration of the disks, permitting fine adjustment to meet soil conditions. An extension crank is available, enabling the operator to make depth adjustments from the tractor seat. A lever and quadrant on the front furrow wheel axle permits raising and lowering the front end of the disk gang for level plowing. The rear furrow wheel can be set to lead slightly away from the furrow wall to counteract the landward thrust of the disks. Extremely shallow or deep plowing can be accomplished by raising or lowering the position of the frame on the furrow axles. This adjustment, however, is used primarily to set the depth of the disk gang when changing to different size disks. If used for extremely deep plowing, this adjustment will decrease road clearance when transporting.

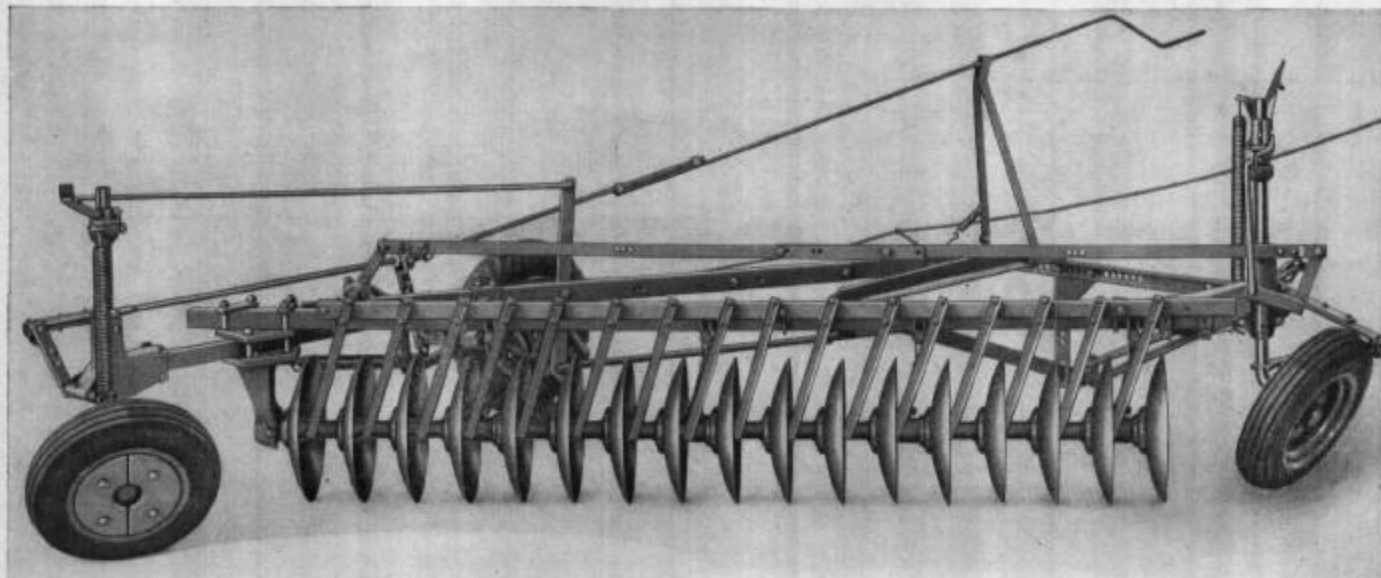


Illust. 1 — To change the cutting width, loosen the six bolts that attach the disk gang thrust bearing bracket to beam plate and main beam; also, loosen nuts on the adjusting bar U-bolt, until stud clears the spot hole in adjusting bar. Shift the rear carriage beam by moving the tractor forward for a wide angle and backward for a narrow angle; select the proper spot hole in the adjusting bar and tighten the bolts.



Nos. 10 and 11 Harrow-Plows

(Continued)



Illust. 1 — Rear view of the 11 C-17 harrow plow. Trash bars and 22-in. carbon steel disks are regular equipment. The pneumatic tire wheels and depth regulator extension crank are special equipment.

Heavy Furrow Axles for Greater Durability

The front and rear furrow wheel axles on the No. 10 harrow-plows are 2-inch diameter and on the No. 11 are 2 $\frac{1}{4}$ -inch. This rugged construction prevents bending of the axles and permits the furrow axle brackets to travel up and down freely when raising or lowering the plow — thus adding to the effectiveness of the quick-acting power lift. Both axle brackets have replaceable bushings.

Enclosed 2 to 1 Gear Ratio Power Lift Runs In Oil

The 2 to 1 gear ratio power lift takes its power from the land wheel and is connected by linkage to the axles and frames at the rear and front furrow wheels. As the lift acts it raises the plow evenly at three points. The lift is totally enclosed and free from the destructive effect of dust and mud. It runs in oil and assures smooth, quick action under the most adverse operating conditions.

Regular Equipment

Carbon steel disks as shown in specifications. Trash bars. Cast iron furrow wheels with plain bearings. Rear depth regulator crank. Three pairs of rear furrow wheel weights totaling 162 lb.

Special Equipment

Disks: 20-in. carbon steel disks for 8-in. spacing plows, 24-in. carbon steel disks for 10-in. spacing plows. Alloy steel disks in 20-in. and 22-in. diameters for 8-in. spacing plows and 24-in. and 26-in. for 10-in. spacing plows.

Moldboard-type disk scrapers: Cast iron furrow wheels with tapered roller bearings. Depth regulator extension crank. Three pairs of front furrow wheel weights totaling 162 lb. Extra rear furrow wheel weights. Pneumatic tire wheels. Two-section gang. Alemite hydraulic grease gun, 1 $\frac{3}{4}$ -lb. capacity.



TILLAGE TOOLS

Section 3

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Tractor Disk Harrows

(No. 10-A, 9 Series, and No. 19-B)

- **Crossed Draft Connections** assure accurate trailing of rear gangs.
- **Ample Adjustments** for all soils and working conditions.
- **Quick, Easy Angling** without side thrust or pushing against disks.
- **Long-Wearing Disks**—heat-treated, crimped-center type with vertically ground cutting edges.
- **Double-Ring Thrust Bearings** of hard, white iron — durable and easy-running.
- **Pressure Gun Lubrication** — quick, easy and efficient.

The No. 10-A, 9 series, and No. 19-B tractor disk harrows are of conventional design and may be classified respectively as *light*, *medium*, and *heavy* harrows. These three are available both as tandem (2-section) and as single-cut (front section only). The No. 10-A harrows have $\frac{7}{8}$ -in. arbor bolts; the 9 series and No. 19-B have $1\frac{1}{8}$ -in. arbor bolts.

Crossed-Draft Connections

On all of these harrows the inner ends of the rear gangs are connected to the outer ends of the front gangs. Conversely, the outer ends of the rear gangs are connected to the inner ends of the front gangs. This crossed-draft arrangement compels the rear gangs to follow the front gangs properly at all times and split the ridges formed by the front disks. The rear gangs cannot skid to one

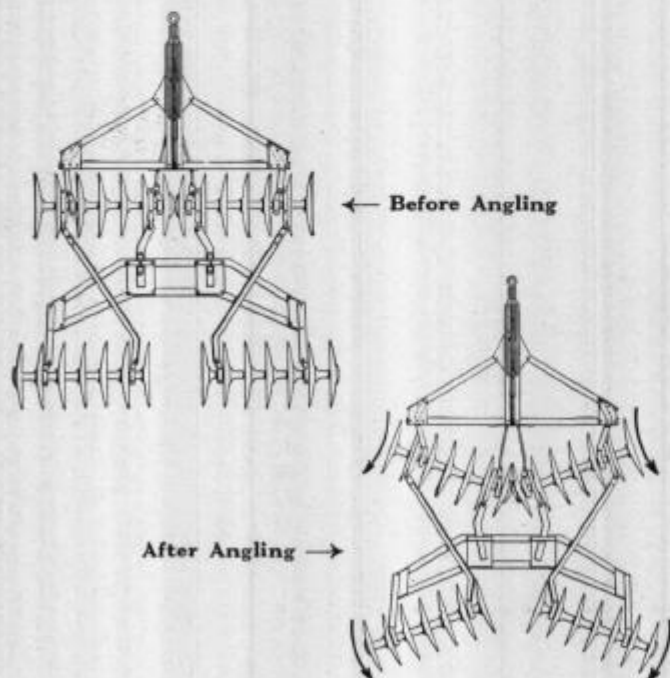
side when turning corners or when encountering hard spots in the field.

Ample Adjustments

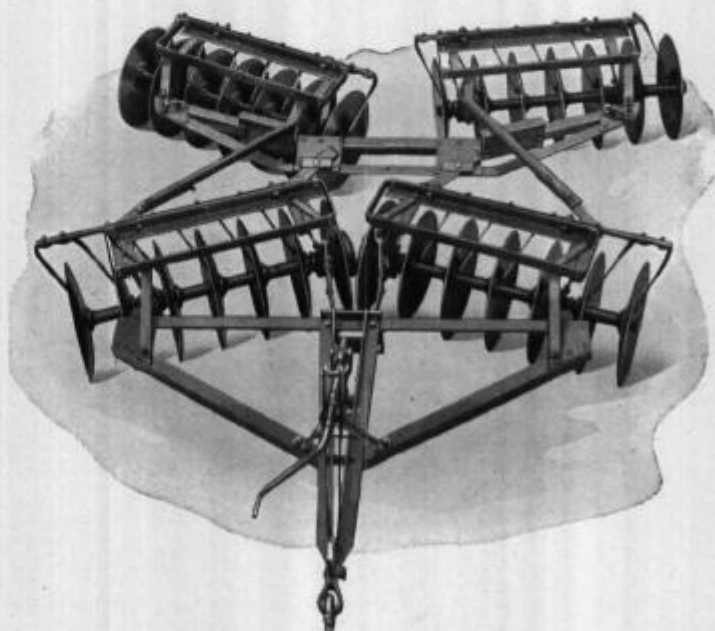
Where conditions make it desirable to give the rear disks a slightly different working angle than the front disks, either one or both of the rear gangs can be set to any one of three different angle positions by means of adjustments on the rear frame. Adjustments are also provided for moving each rear gang independently to the left or to the right.

Gangs Easily Angled

The gangs are correctly pivoted so that, in angling, they assume the desired setting without side thrust or pushing against the face of the disks. A minimum of effort, therefore, is required for angling the gangs.



Illust. 1—Relative positions of gangs before and after angling. Note how crossed-draft connections function to push back both the *inside* ends of front gangs and *outside* ends of rear gangs. Arrows indicate how gangs move in conformance to shape of disks, thus avoiding all thrust against the disk faces.

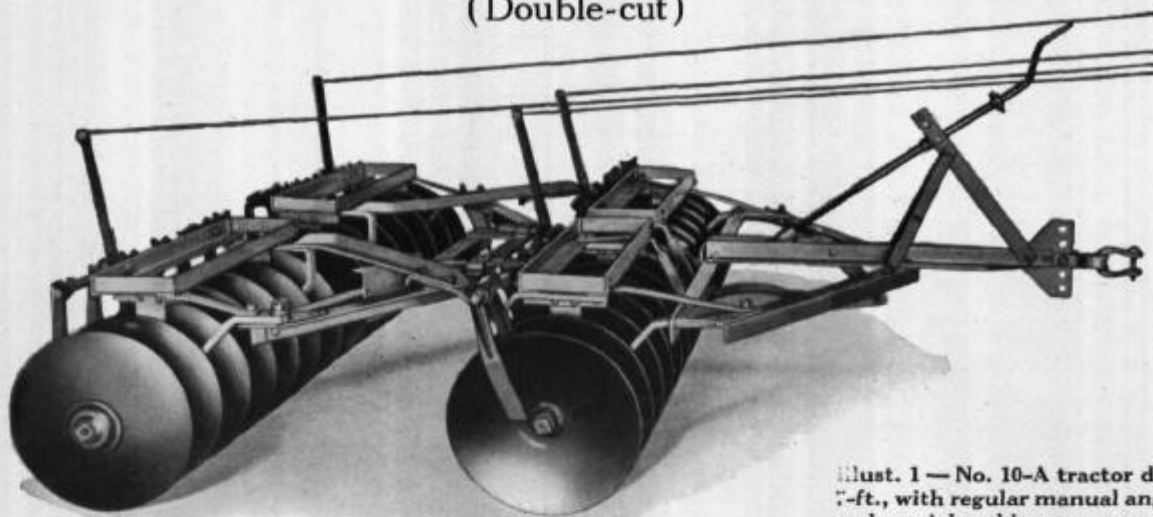


Illust. 2—Overhead view of tractor disk harrow showing method of connecting front and rear sections. The crossed-draft connections maintain the rear gangs in correct position at all times to thoroughly pulverize the soil cut out by the front gangs. Rear gangs cannot skid to one side when turning corners or when encountering unusual soil conditions.



No. 10-A Tractor Disk Harrows

(Double-cut)



Illustr. 1 — No. 10-A tractor disk harrow, 7-ft., with regular manual angling device and special rocking scrapers.

The No. 10-A tractor disk harrow is a popular model for average soil conditions. Its relatively lighter weight adapts it well for use with smaller tractors.

The No. 10-A has heavy-gauge, crimped-center disks; crossed-draft connections; lateral adjustments for the rear gangs; and the quick-angling, accurate-trailing and flexibility features found on other International Harvester tractor disk harrows. The angle-steel frame is reinforced with gusset plates at the corners, assuring rigid, durable construction. The disks are spaced $6\frac{1}{2}$ inches apart.

The No. 10-A is regularly equipped with screw-type angling device, manually operated from the tractor seat. It may also be had with automatic, tractor-operated angling on special order. The hitch has vertical height adjustments.

Regular Equipment

Screw-type manual angling device. Plain disks (16 or 18-in. diameter, as specified). Weight boxes front and rear. Stationary adjustable scrapers. Vertically adjustable hitch.

Special Equipment

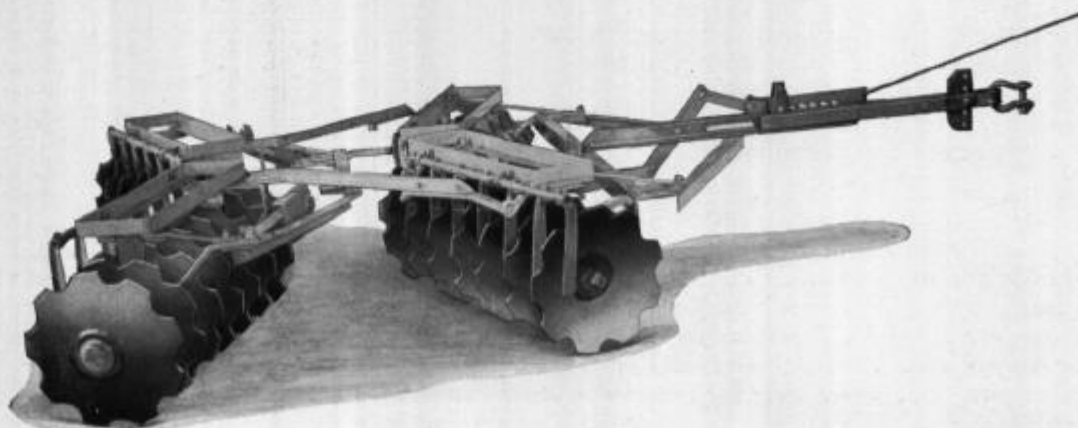
Allowance will be made for harrows taken without scrapers. Rocking scrapers. Cut-out disks (16 or 18-in.). Auburn-type, saucer-shaped disks (16 or 18-in.), for use in light, sandy soils; also, depth gauges and extra-length arbor bolts.

Automatic, tractor-operated angling in lieu of manual angling. Long crank for use with Farmalls H and M. Independent angling attachment. Hydraulic de-angling device. Transport trucks. Center tooth attachment. Hitch for trailing implements. *See also pages on Single Cut Harrows and on Features, Attachments, and Equipment.*

Specifications

Size	Number Disks	Net Weight—Approx.		Deduct for Scrapers Not Taken
		16-in. Disks	18-in. Disks	
5 ft.	20	677 lb.	736 lb.	38 lb.
6 ft.	24	747 lb.	804 lb.	47 lb.
7 ft.	28	822 lb.	897 lb.	53 lb.
8 ft.	32	888 lb.	968 lb.	60 lb.

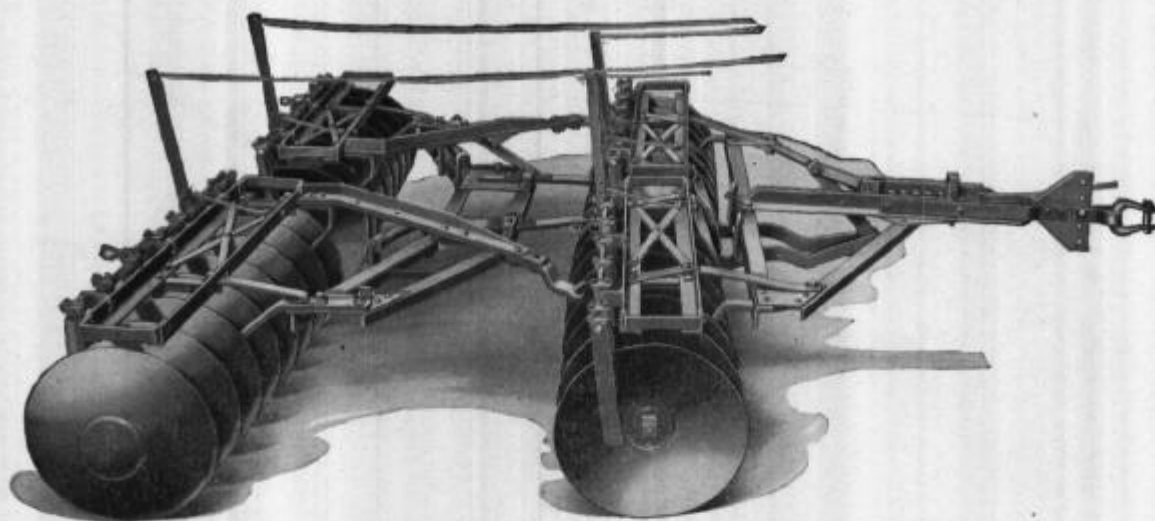
Weights based on regular equipment



Illustr. 2 — No. 10-A tractor disk harrow shown with special automatic, tractor-operated angling, regular stationary adjustable scrapers, and cut-out disks.



No. 9 Series Tractor Disk Harrows



Illust. 1 — No. 9-A tractor disk harrow, 8-ft. size, shown as regularly equipped with automatic, tractor-operated angling and rocking scrapers.

These sturdily-built tractor disk harrows have the necessary weight and stamina for operation behind powerful tractors in difficult soil conditions. They penetrate quickly and do an excellent job of disking in hard, dry ground—in fields containing heavy stalks and root systems, and in ground that is ridged and uneven.

The No. 9 harrows can be supplied in three different disk spacings—No. 9A with $6\frac{1}{2}$ -in. spacing, the No. 9-B with 9-in. spacing, and the No. 9-BA with combination spacings (9-in. front and $6\frac{1}{2}$ -in. rear).

The No. 9-B, because of its wider spacing, permits greater disk penetration. It is popular, therefore, for use in gumbo, bottom lands, hybrid corn stalk ground, or where a high stubble has been left in the field. Heavily manured, weedy and trashy fields and cover crops usually respond better to disking when the disks are wide-spaced.

There are three bearings per gang on the 10-ft. harrows and two bearings per gang on the smaller sizes. On no sizes of the wide-spaced harrows are there more than two disks outside the frame bearing on any gang. This reduces the strain on the bearing and arbor bolt.

Regular Equipment

Automatic, tractor-operated angling. Vertically adjustable hitch. Plain disks, 16 or 18-in. diameter, as specified. Rocking scrapers. Weight boxes, front and rear.

Special Equipment

Manual angling in lieu of automatic, power angling. Cut-out disks, 16 or 18-in. Auburn-type, saucer-shaped disks, 16 or 18-in., for use in light, sandy soils; also depth gauges and extra-length arbor bolts. Rigid-type, full-blade scrapers. Hydraulic de-angling device. Independent gang-angling attachment for No. 9-A. Transport trucks. Center tooth attachment with either narrow point or shovel. Hitch for trailing implements. Double set lever bar pressure rollers for Nos. 9-A and 9-B.

See also pages on Single Cut Harrows and on Features, Attachments, and Equipment.

Specifications

No. 9-A ($6\frac{1}{2}$ -in. Spacing)			
Size	Number Disks	Net Weight—Approx.	
		16-in. Disks	18-in. Disks
5 ft.	20	885 lb.	937 lb.
6 ft.	24	948 lb.	1014 lb.
7 ft.	28	1087 lb.	1148 lb.
8 ft.	32	1189 lb.	1264 lb.
9 ft.	36	1294 lb.	1377 lb.
10 ft.	40	1432 lb.	1522 lb.

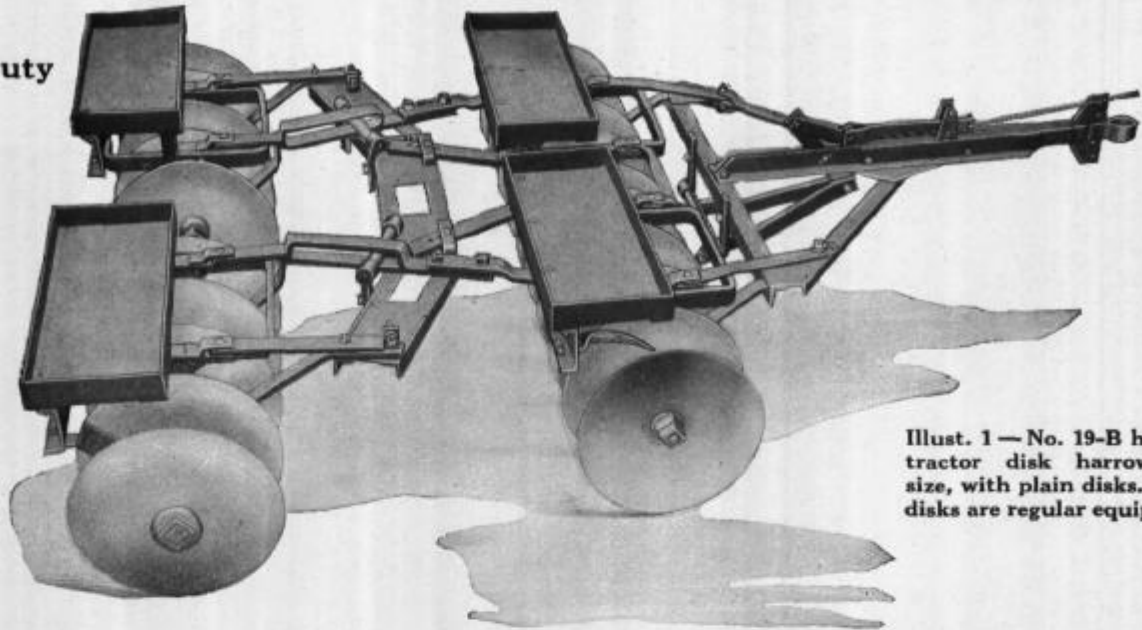
No. 9-B (9-in. Spacing)			
Size	Number Disks	Net Weight—Approx.	
		16-in. Disks	18-in. Disks
$5\frac{1}{2}$ ft.	16	873 lb.	915 lb.
7 ft.	20	1021 lb.	1069 lb.
$8\frac{1}{2}$ ft.	24	1139 lb.	1195 lb.
10 ft.	28	1259 lb.	1336 lb.

No. 9-BA ($6\frac{1}{2}$ -in. Spacing in Rear) (9-in. Spacing in Front)			
Size	Number Disks	Net Weight—Approx.	
		16-in. Disks	18-in. Disks
$5\frac{1}{2}$ ft.	18	880 lb.	929 lb.
7 ft.	24	1050 lb.	1104 lb.
$8\frac{1}{2}$ ft.	28	1158 lb.	1224 lb.
10 ft.	32	1274 lb.	1354 lb.



No. 19-B Tractor Disk Harrows

Heavy-Duty



Illust. 1 — No. 19-B heavy-duty tractor disk harrow, 6½-ft. size, with plain disks. Cut-out disks are regular equipment.

The No. 19-B is an exceptionally sturdy harrow designed for heavy-duty work. Its heavy construction, wide (9-inch) spacing, and the rigid, full-blade scrapers adapt it well to sticky soil conditions, cotton land, heavily-manured fields and for disking under cover crops. Available in 6½ and 8-foot sizes and with either 20 or 22-inch diameter disks.

Regular Equipment

Automatic, tractor-operated angling. Vertically adjustable hitch. Extra-high weight boxes, front and rear. Cut-out disks (20 or 22-in., as specified). Rigid, full-blade scrapers. 1½-inch arbor bolts.

Special Equipment

Manual angling device in lieu of power angling. Center tooth. Trailing hitch for implements. Transport trucks. Plain disks. Allowance made for harrows taken without scrapers.

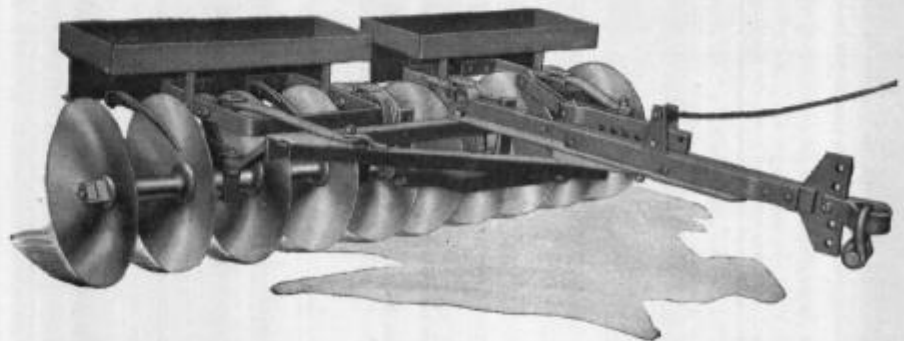
See also pages on Features, Attachments, and Equipment.

Specifications

Size	Number Disks	Disk Spacing	Net Weight — Approx.		Deduct for Scrapers Not Taken
			20-in. Disks	22-in. Disks	
6½ ft.	16	9-in.	1271 lb.	1373 lb.	30 lb.
8 ft.	20	9-in.	1443 lb.	1563 lb.	42 lb.

No. 19-BF Bush and Bog Tractor Disk Harrows

This harrow corresponds to the front section of the No. 19-B heavy-duty tractor disk harrow described above. It provides a lighter draft unit for use with Farmalls A and B and other small tractors in sticky soils, heavy trashy fields, and for disking under cover crops. The heavy, cut-out disks do an excellent job of cutting heavy stalks and penetrating hard or trashy ground. When used with a Farmall, a swinging drawbar on the tractor is recommended.



Illust. 2 — No. 19-BF, a popular bush and bog disk harrow for smaller tractors.

Regular Equipment

Automatic, tractor-operated angling. Cut-out disks (20 or 22-inch, as specified). Weight boxes. Rigid, full-blade scrapers. Vertically adjustable hitch.

Special Equipment

Allowance made for harrows taken without scrapers. Center tooth. Plain disks.

Specifications

Size	Number Disks	Disk Spacing	Net Weight — Approx.		Deduct for Scrapers Not Taken
			20-in. Disks	22-in. Disks	
6½ ft.	8	9 in.	650 lb.	678 lb.	15 lb.
8 ft.	10	9 in.	735 lb.	776 lb.	21 lb.



INTERNATIONAL HARVESTER

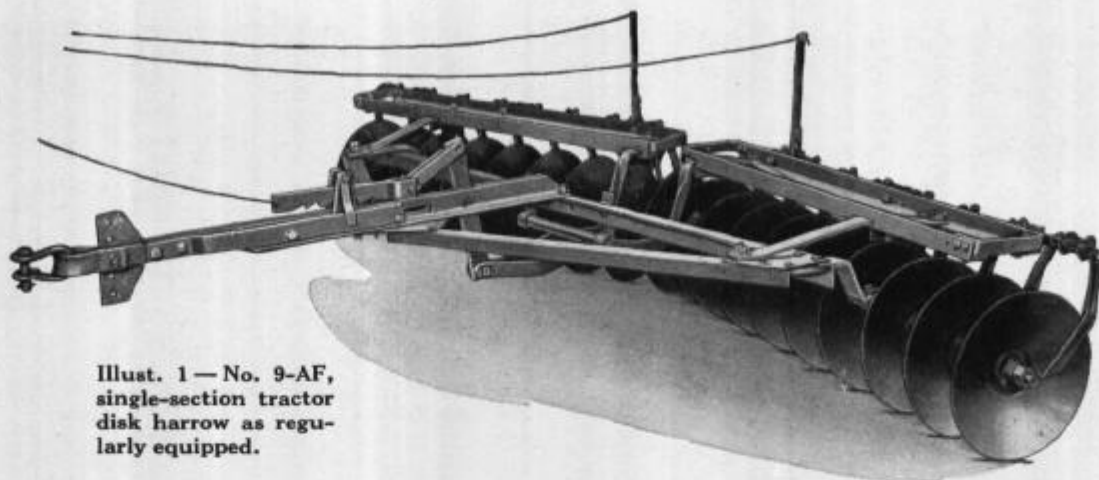


*The No. 7 series tractor disk harrows
are replaced by the No. 15-B disk harrow
. . . see page 106-C.*



Single-Section Tractor Disk Harrows

(Nos. 10 and 9 Series)



Illust. 1 — No. 9-AF, single-section tractor disk harrow as regularly equipped.

International Harvester tractor disk harrows, described on the preceding pages, are also available as single-section harrows without the rear gangs. The single-section units are adapted for use with the smaller sizes of tractors and for special operating conditions where a two-section disk harrow is not required.

For a list of regular and special equipment turn to preceding pages devoted to the corresponding double-disk harrows having the same series number. Description and specifications on the No. 19-BF single-section Bush and Bog harrow appear on page 99.

Specifications—No. 10-AF

*No. 10-AF 6½-inch Spacing	Number Disks	Net Weight (Approx.)	
		16-in. Disks	18-in. Disks
5-ft.	10	335 lb.	365 lb.
6-ft.	12	360 lb.	395 lb.
7-ft.	14	400 lb.	440 lb.
8-ft.	16	435 lb.	480 lb.

*Corresponds to No. 10-A double-section harrow.

Specifications—No. 9 Series

*No. 9-AF 6½-inch Spacing	Number Disks	Net Weight (Approx.)	
		16-in. Disks	18-in. Disks
5-ft.	10	445 lb.	465 lb.
6-ft.	12	485 lb.	515 lb.
7-ft.	14	540 lb.	580 lb.
8-ft.	16	590 lb.	625 lb.
9-ft.	18	610 lb.	680 lb.
10-ft.	20	705 lb.	750 lb.

*Corresponds to No. 9-A double-section harrow.

*No. 9-BF 9-inch Spacing	Number Disks	Net Weight (Approx.)	
		16-in. Disks	18-in. Disks
5½-ft.	8	435 lb.	480 lb.
7-ft.	10	500 lb.	555 lb.
8½-ft.	12	555 lb.	585 lb.
10-ft.	14	630 lb.	650 lb.

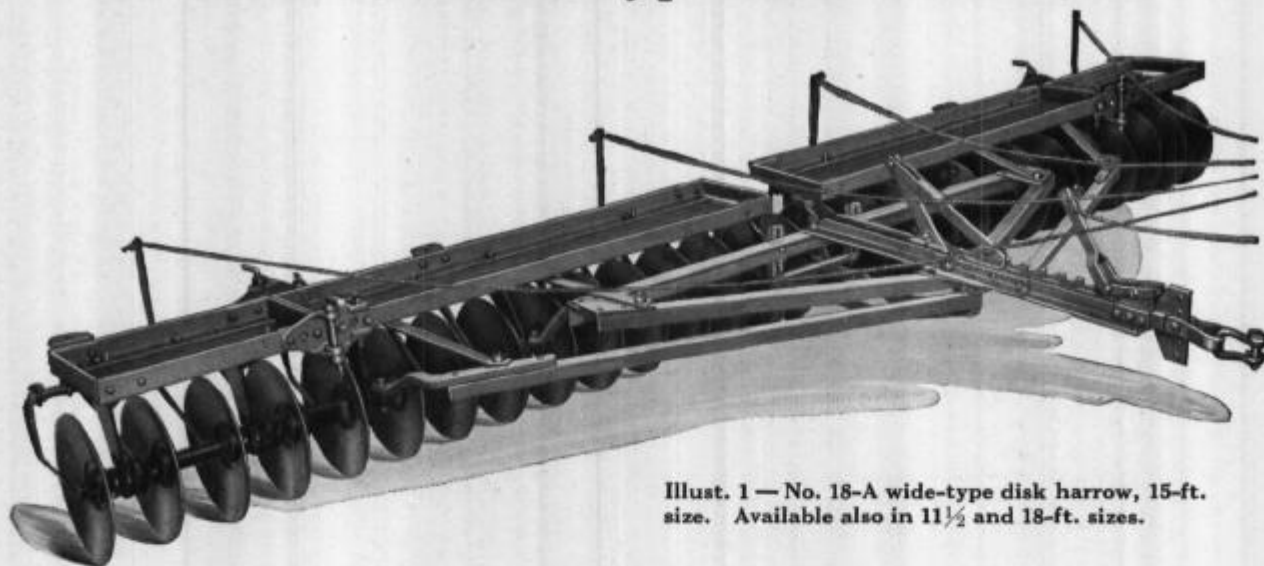
*Corresponds to No. 9-B double-section harrow.



Illust. 2 — The 8-ft. size No. 10-AF single-section tractor disk harrow.



No. 18-A Wide-Type Disk Harrows



Illust. 1 — No. 18-A wide-type disk harrow, 15-ft. size. Available also in 11½ and 18-ft. sizes.

- Folds easily for passing through gates or narrow lanes.
- Fully automatic gang angling.
- Ample adjustments for hard or soft soil conditions.
- Heat-treated, crimped-center disks with vertically ground cutting edges.
- Pressure-lubricated, double-ring thrust bearings of hard, white iron.

This is a popular type of disk harrow for controlling weeds on summer fallow ground and for use in stubble and cornstalk ground where a big-capacity harrow is desired.

The No. 18-A harrows come in 11½, 15, and 18-ft. sizes. The two larger sizes have end sections joined to a 10-ft. center section by heavy hinges. Removal of the inner hinge pins allows the end sections to swing back so that the harrow will pass through a standard 12-ft. gate.

Ample adjustments are provided for keeping the gangs level. The inner ends of the center gangs can be raised or lowered by means of a snubbing block provided with a free-acting roller. The end sections can be leveled to correspond with the center gangs by means of slotted adjustments on the hinges.

The harrow is set to the desired working angle by releasing a rope-controlled lever and moving the tractor forward. Backing the tractor straightens the gangs.

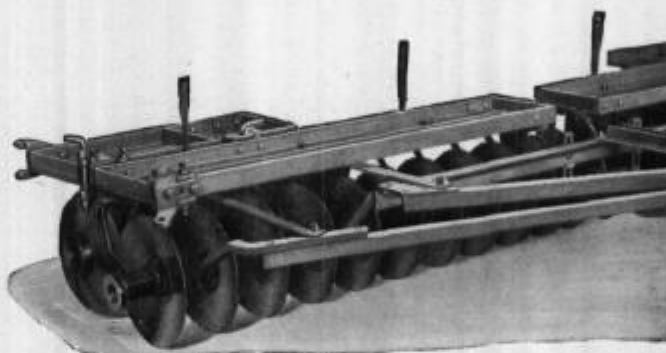
Regular Equipment

Weight boxes. Plain disks, 16 or 18-in. diameter, as specified. Adjustable rocking scrapers. Automatic tractor-operated angling. Vertically adjustable hitch.

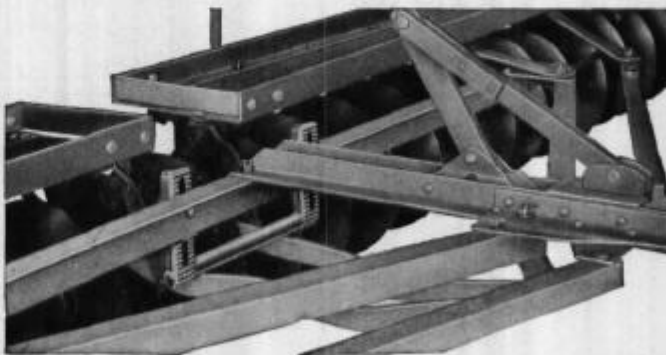
Special Equipment

Cut-out disks. Center tooth attachment (spring-type or shovel-type). Transport truck.

See also pages on Features and Equipment.



Illust. 2 — The outer sections can be swung back, as illustrated, to permit passing through a 12-ft. gate. No lifting is required.



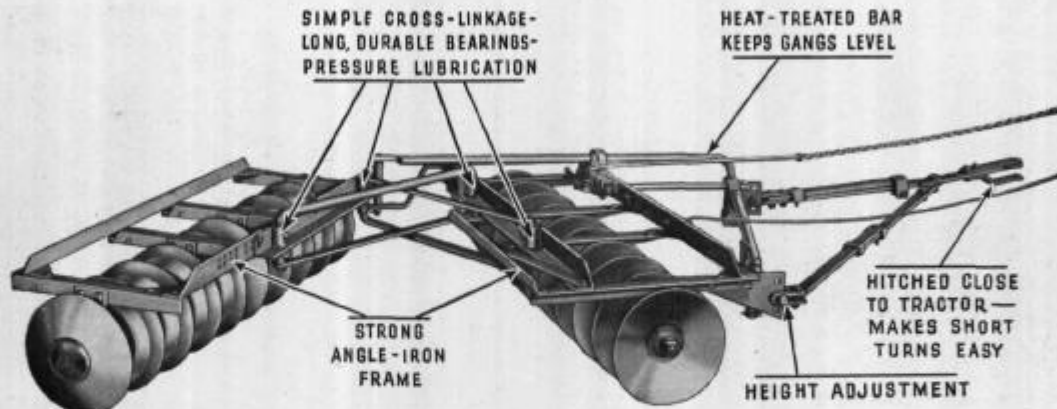
Illust. 3 — Serrations on the snubbing block provide a wide range of adjustments for raising or lowering the inner ends of the gangs.

Specifications

Size	Number Disks	Net Weight — Approximate	
		16-in. Disks	18-in. Disks
11½ ft.	22	868 lb.	930 lb.
15 ft.	28	1132 lb.	1211 lb.
18 ft.	32	1216 lb.	1306 lb.



No. 14-A Offset Disk Harrows



Illust. 1—The 7-foot No. 14-A tractor disk harrow shown with two-point hitch.

- Low frame for ample clearance in orchards and groves.
- Does a good job of disking when making left-hand turns.
- Two-point hitch makes it easy to turn to the right—without stopping the tractor or pulling a rope.
- Easy hitch adjustments for left or right offset.
- Strong cross-link construction of gangs.
- Heat-treated, crimped-center disks with vertically ground cutting edges.

No. 14-A harrows are well suited for work in orchards and groves where it is desired to disk close to the trees, yet keep the tractor out in the open and away from the branches and fruit.

The frame and weight boxes are below the top edges of the disks to avoid damage to overhanging branches. The front disks throw the soil to the right and the rear disks throw it to the left. When it is desired to throw the soil to the trees the rear gang can be moved 9 inches to the left by changing the position of three bolts. This permits all the soil from the front outer disks to be

thrown against the trees. In addition, ample adjustment is provided for moving the rear gang left or right to cut out accurately the ridges formed by the disks of the front gang.

The hitch is trip-rope controlled. Any one of a wide range of working angles of the gangs can be instantly obtained with the first forward movement of the harrow. The gangs are straightened just as quickly by pulling the rope and backing the tractor. When it is desired to hitch the harrow directly behind the tractor for general field work, or when the harrow is to be offset to the left instead of to the right, this is easily accomplished by adjusting the hitch bars. The hitch bars can also be reversed for operation in extreme left-hand offset position.

When the tractor is turned to the right a chain attached to an anchor bar on the drawbar automatically pulls forward on the left side of the front gang; cross linkage in turn pulls forward on the right side of the rear gang. This straightening of the disks on right-hand turns reduces the load on the tractor and prevents ganging of the soil.

Regular Equipment

Saucer-shaped (Auburn-type) disks. Depth gauges.

Special Equipment

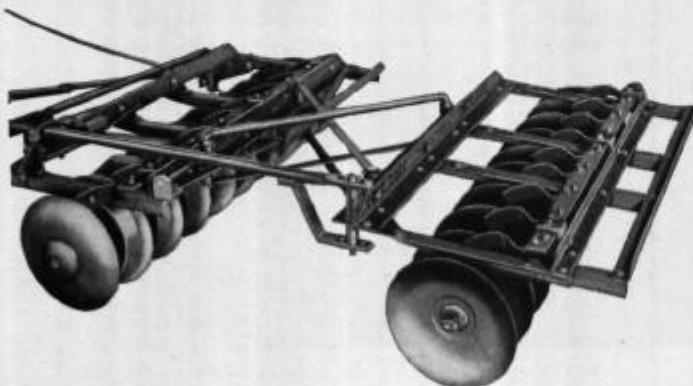
Stationary full-blade scrapers. Rear weight box. Tractor hitch (specify tractor).

See also pages on Features and Equipment.

Specifications

Size	No. Disks	Net Weight* (Approx.)	
		16-in. Disks	18-in. Disks
6 -ft.	20	907 lb.	962 lb.
6½-ft.	22	940 lb.	1000 lb.
7 -ft.	24	972 lb.	1038 lb.

*Equipped with saucer-shaped disks and depth gauges (less scrapers, hitch and rear weight box).

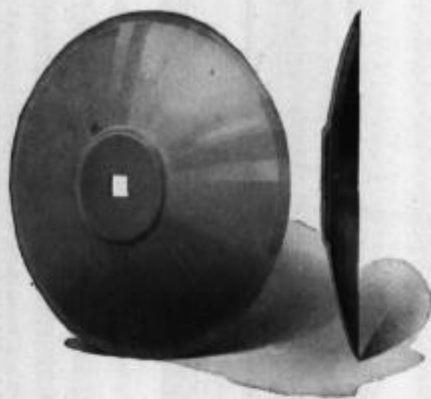


Illust. 2—No. 14-A offset harrow with stationary full-blade scrapers and weight box for the rear gang.

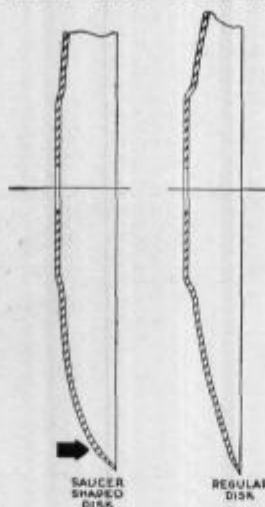


Tractor Disk Harrow Features

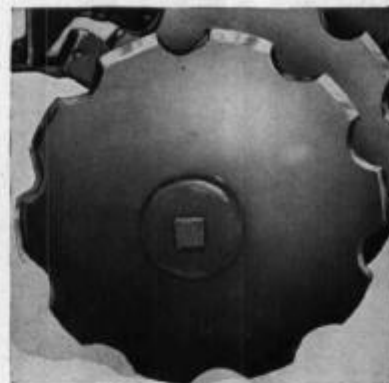
(Disks and Bearings)



Illust. 1—Plain-type disk showing the crimped center. This feature adds greatly to the strength and long life of the disks.



Illust. 2—Special Auburn-type, saucer-shaped disks are available for use in soft, sandy soils. These disks are more rounded near the edges than the regular plain-type disk. The cross-sectional views shown here illustrate the relative shapes of the two types of disks.

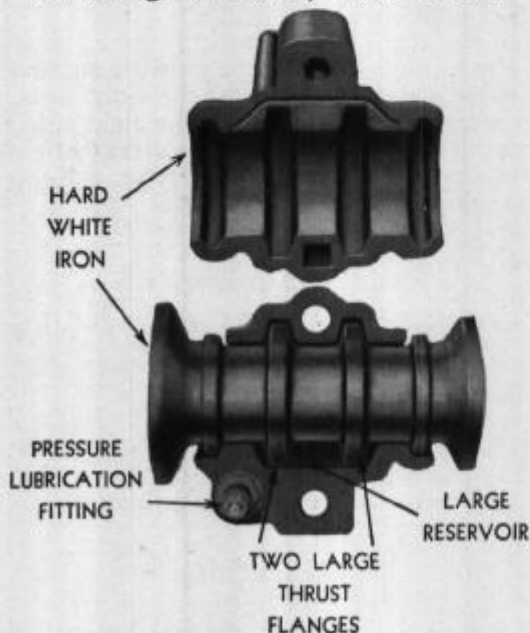


Illust. 3—Special cut-out disks are available. These disks cut stalks more effectively than the conventional full-edge type and provide better penetration in extremely heavy and trashy ground.

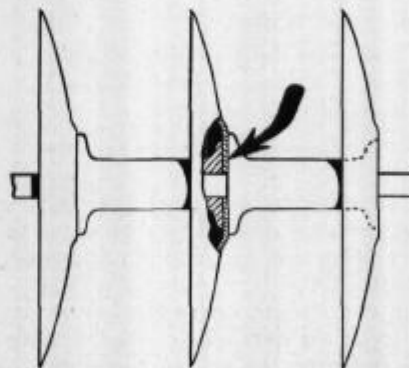
Crimped-Center, Heat-Treated Disks

All International Harvester disks are made of heavy-gauge steel, heat-treated to impart toughness and to retain a good cutting edge. The centers are crimped, thus reinforcing the disks where the greatest strain comes and adding greatly to the useful life of the disks. The crimped center also provides a flat surface for the spacing spools to contact, assuring a tight fit even after many seasons of use.

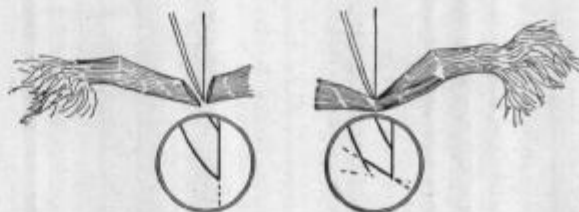
Long-Life, Double-Ring Thrust Bearings of Hard, White Iron



Illust. 6—The bearings are made of long-wearing, hard white iron with double-ring thrust flanges. The load is carried almost entirely on the wide, heavy flanges. Bearings are fitted for pressure gun lubrication and have a large reservoir from which lubricant is carried to all parts of the bearing.



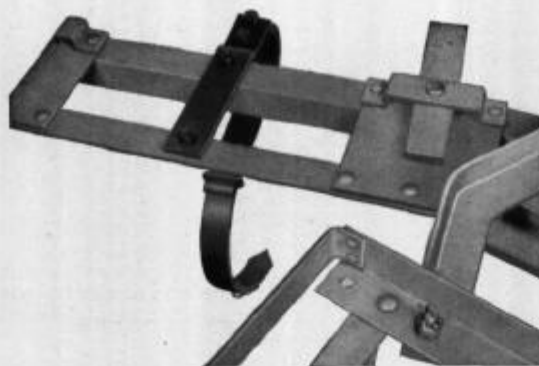
Illust. 4—Sectional view showing disk gang assembly. The center disk is cut away to show how the flat surface of the crimped center (note arrow) makes possible an extremely close fit between the disk and the spacing spools on both sides. This firm contact reinforces the arbor bolt, extending through the spools, and assures a rigid, long-life assembly.



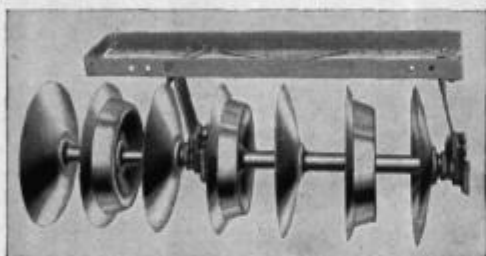
Illust. 5—All International Harvester disks are ground vertically on the *inside* edges (as illustrated at left) rather than on the *outside* edges as shown at right. Vertical grinding sharpens the blades in the natural direction of pressure so that stalks are cleanly cut rather than bent.



Equipment for Tractor Disk Harrows



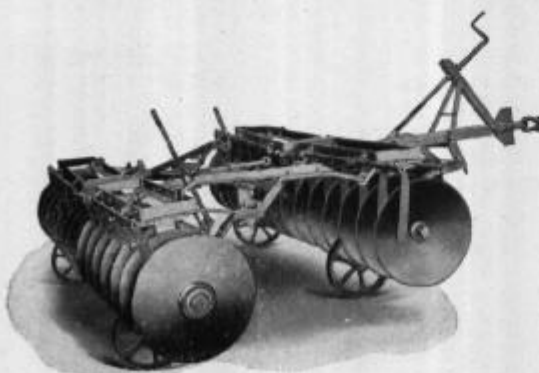
Illust. 1 — The center tooth attachment is useful for cutting out the center ridge left between the two front gangs. Available as special equipment for all tractor disk harrows.



Illust. 2 — Auburn-type disks and depth gauges which can be supplied for use in extremely light, sandy soils.



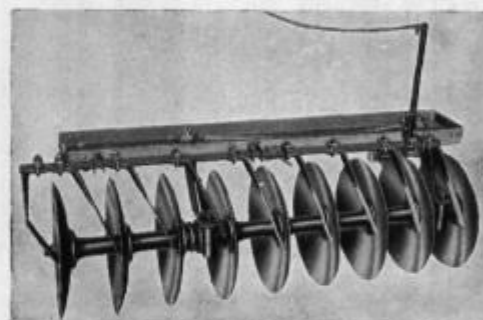
Illust. 3 — Special hitch for trailing implements, such as soil pulverizer, peg harrow, grain drill, etc. Available for all tractor disk harrows.



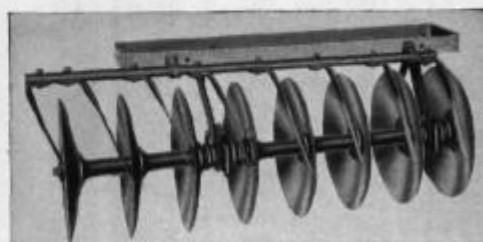
Illust. 4 — Roller-bearing transport trucks are available on special order for all tractor disk harrows. Useful for transporting harrows over hard-surfaced roads.



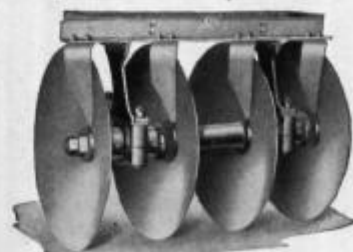
Illust. 5 — The screw-type manual angling device can be supplied as an extra or in lieu of the automatic (power-set) angling where the latter is considered regular equipment — (see equipment listings under individual harrows).



Illust. 6 — Rocking type scrapers are adjustable to any desired setting and can be oscillated, by means of rope-controlled levers, across the face of the disks. Supplied either regular or special, as listed under individual harrows.



Illust. 7 — The stationary adjustable scrapers are supplied both regular and special, as listed under individual harrows. These scrapers can be adjusted individually to the desired setting.



Illust. 8 — Rigid-type, full-blade scrapers are popular in heavy, sticky soils. They keep the entire face of the disk clean without attention from the operator. Supplied either special or regular, as listed under individual harrows.



Tractor Disk Harrow Attachments

Independent Angling Attachment

The independent gang-angling attachment makes it possible to operate a No. 10-A or 9-A harrow with only one section in angled position while the other can cut shallower or even roll free in straightened position. This feature is especially useful when working terraces, filling in dead furrows and leveling back furrows.

The attachment consists essentially of flat-steel, telescoping drawbar connections which replace the regular outer drawbar connections between the harrow sections. Notched adjuster bars are provided for controlling the setting quickly and easily. Independent angling attachments can be supplied for all sizes of Nos. 10-A and 9-A harrows.

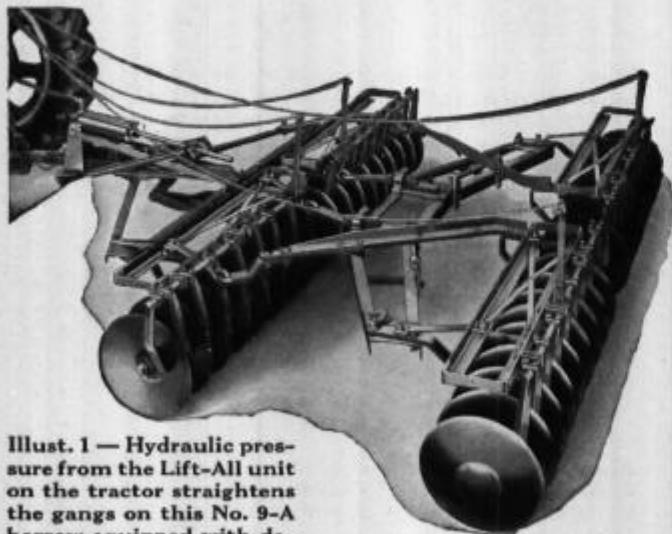
Hydraulic De-Angling Attachment

This attachment is a handy time-saver when crossing grassed waterways and in fields where it is desirable to leave certain areas uncut to prevent erosion.

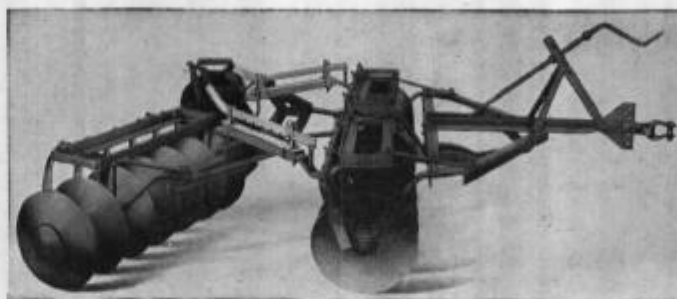
This device makes it possible to straighten the gangs quickly and easily by hydraulic power and with the machine either in motion or standing still. It is especially useful when crossing ditches or when encountering soft, wet spots.

To use the device it is necessary that the tractor be equipped with a Lift-All unit. The de-angling attachment is mounted on the harrow and consists essentially of a hydraulic cylinder, connected to the Lift-All, together with the necessary linkage for operating the gangs. Harrows with the de-angling attachment can also be operated mechanically in the usual way when hitched to a tractor not equipped with the Lift-All.

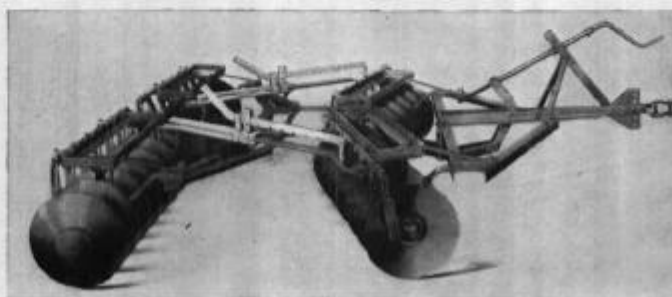
The attachment is available for Nos. 10-A and 9 series harrows equipped with either automatic or manual gang-angling.



Illust. 1 — Hydraulic pressure from the Lift-All unit on the tractor straightens the gangs on this No. 9-A harrow equipped with de-angling device.



Illust. 2 — No. 10-A disk harrow and independent angling attachment with front section straightened to permit filling in dead furrows.



Illust. 3 — This shows the independent angling attachment with rear gangs straightened for leveling down back furrows, high spots, etc.



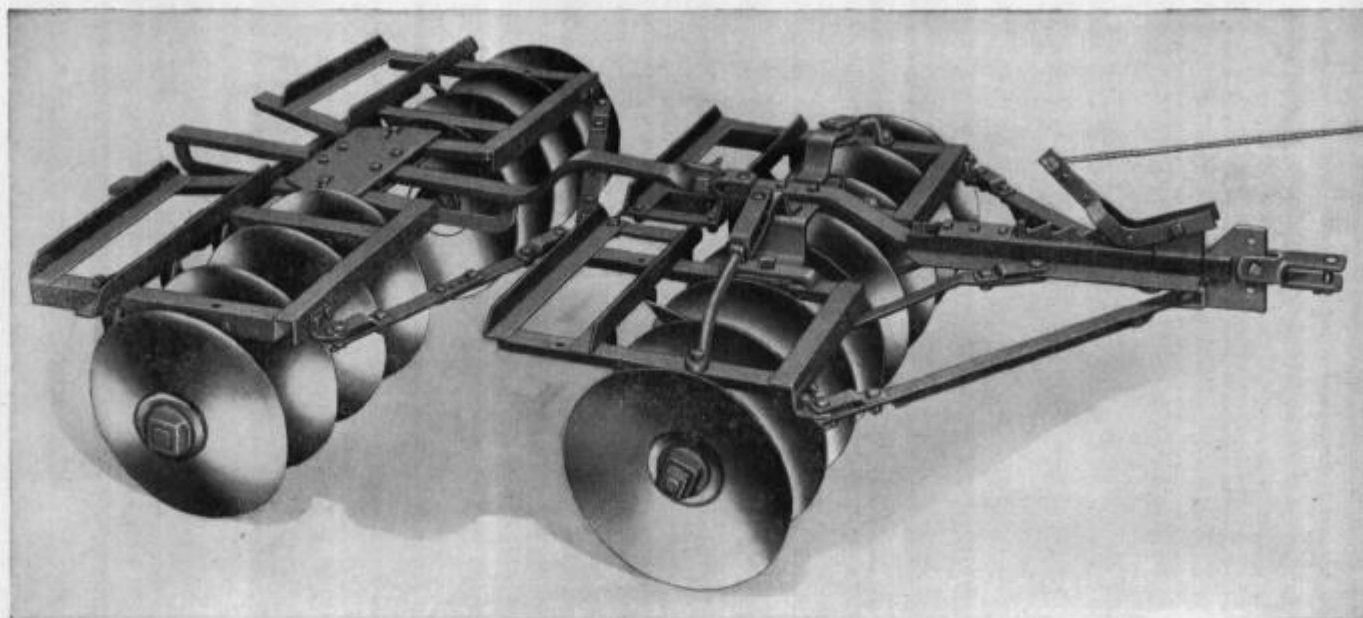
Illust. 4 — Hydraulic de-angling device for use with harrows equipped with automatic (power-set) gang angling.

Illust. 5 — Hydraulic de-angling device for use with harrows equipped with manual (screw-type) gang angling.



No. 23-A Tandem Disk Harrow

(4-Ft., for Small Tractors)



Illust. 1 — The No. 23-A Disk Harrow showing adjustable tractor hitch and 5-position angling adjustment bar with lever engaged.

- For use with small tractors.
- Easy to maneuver.
- Accurate trailing . . . no undisked ridges.
- Quick, easy power angling and straightening . . . 0 to 20 degrees.
- Accurate backing . . . no jackknifing.

The No. 23-A is a relatively light-weight 4-foot tandem disk harrow for use with small tractors, particularly the Farmall Cub. It is available with either 14 or 16-inch disks spaced $6\frac{5}{8}$ -inches apart on sturdy $\frac{7}{8}$ -inch arbor bolts.

Easy to Maneuver . . . No Jackknifing

A center main frame, in place of the front and rear frames ordinarily used in the conventional tandem disk harrows, increases the flexibility of the machine and makes it easy to turn and maneuver. Backing the tractor straightens the gangs; the rear disk gangs remain stationary while the front gangs and the center main frame move to the rear. As the front gangs contact the rear gangs, the machine moves backward . . . a close, compact unit that cannot jackknife or buckle as it is backed.

This feature, plus the 4-foot width and the short turning radius, make it possible to work all the ground in irregular spaces and in tight corners — making it possible for the small acreage farmer to utilize all his land and eliminate unproductive patches of land. This maneuverability is equally advantageous to truck gardeners. As an auxiliary unit for the large farm operator, the No. 23-A can do jobs where large equipment is not suitable.

Heavy-Duty Construction

The No. 23-A is of welded steel construction. It has 16 crimped center, vertically ground, heat-treated, heavy gauge steel disks spaced $6\frac{5}{8}$ -inches apart on sturdy $\frac{7}{8}$ -inch arbor bolts—the same type of disks that have given years of outstanding service to users of larger size International Harvester disk harrows. Long-wearing, hard white iron bearings with double-ring thrust flanges carry the entire load of the disks and are pressure lubricated, assuring years of dependable service. See page 104 for details.

Specifications

Size	No. of Disks	Net Weight (pounds)	
		14-in. Disks	16-in. Disks
4-ft.	16	482	503



No. 23-A Tandem Disk Harrow

(4-ft., for Small Tractors) (Continued)

Gangs Easily Angled

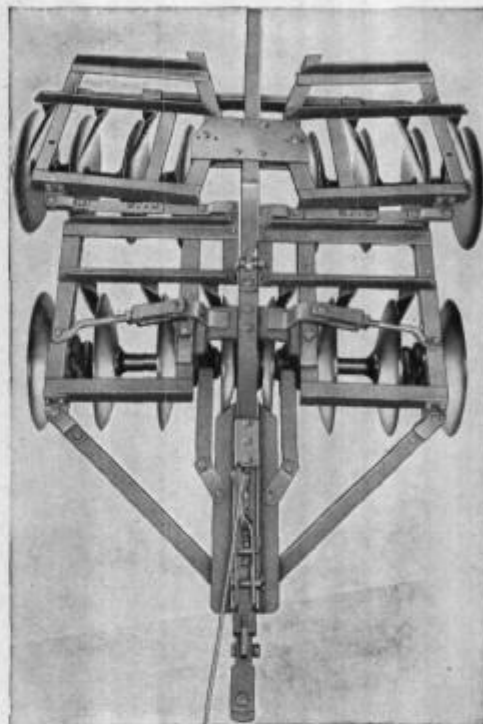
Angling of the gangs for varying soil conditions is a matter of seconds. A gang adjustment bar and lever, easily adjusted from the tractor seat by means of a rope, permits five different angle settings from 0 to 20 degrees. Just disengage the lever . . . move the tractor forward or backward until the gangs have the right angle . . . then drop the lever into position . . . and the gangs are locked in the new position ready for work. A 4-hole adjustment on each of the diagonal drawbars can be used to give added angles to the rear gangs in cases where soil conditions make it advisable for the rear disks to have a different angle from the front disks.

Accurate Trailing

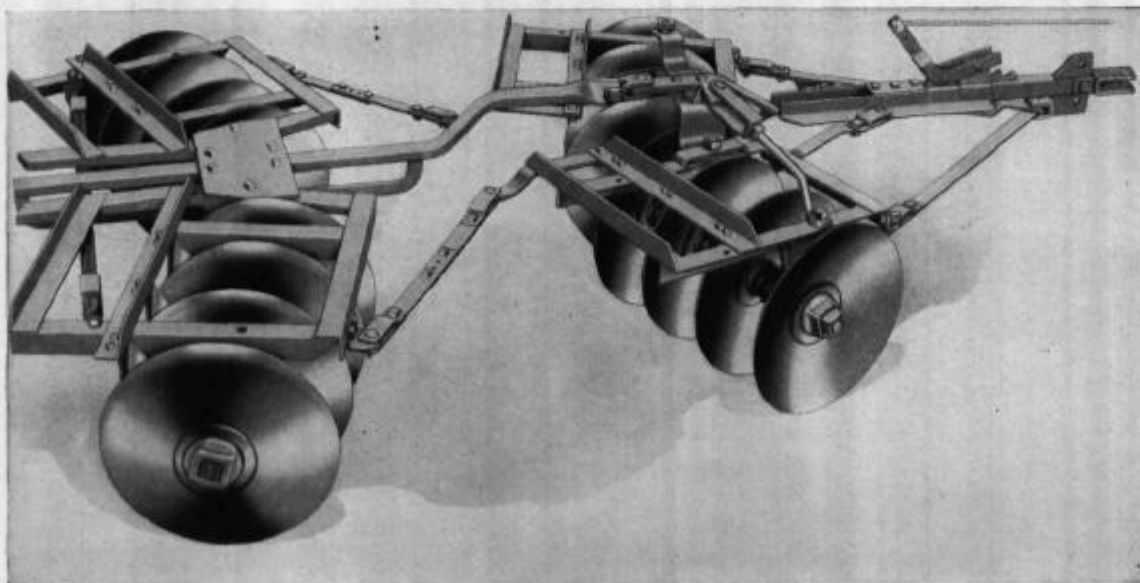
Diagonal drawbars connecting the front and rear disk gangs force the rear gangs to follow the front gangs properly at all times, the rear disks mulching the dirt thrown by the front disks, even on turns. A three-hole adjustment in the plate which connects the rear gangs makes it possible to move either, or both, of the rear gangs to the left or right with relation to the front gangs. All gangs are held in level cutting position . . . the rear gangs by a telescoping hold-down bar attached to the rear section back of the disks . . . each of the front gangs by hold-down rods connected by an adjustable turnbuckle located above the disks.

Regular Equipment: Full-blade scrapers.

Special Equipment: Center tooth.



Illust. 1 — The No. 23-A tandem disk harrow in backing position.



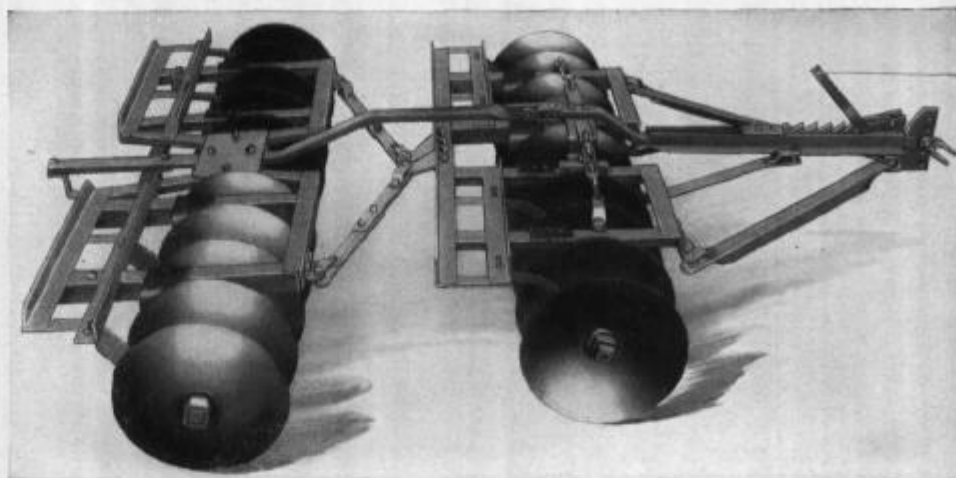
Illust. 2 — The No. 23-A 4-ft. tandem disk harrow with the gangs in angled position.



No. 15-B Tractor Disk Harrow

Heavy-Duty—6½ and 8 ft.

- Easy to maneuver.
- Accurate backing . . . no jackknifing.
- Accurate trailing . . . no undisked ridges.
- Quick, easy power angling and straightening . . . 0 to 20 degrees.



Illust. 1 — The 15-B 8-foot tractor disk harrow is regularly supplied with solid disks and full-blade scrapers.

The No. 15-B is a heavy-duty tandem disk harrow with a short turning radius. It is available in 6½ and 8 foot widths with 18, 20 or 22-inch solid disks spaced 9 inches apart on rugged 1½-inch arbor bolts. Cut-out disks in the same sizes are available as special equipment. Its heavy construction gives deep penetration and enables it to thoroughly work hard ground, especially cotton land, stubble, cornstalks, trashy and heavily-manured fields, as well as cover crops.

Easy to Maneuver

A center main frame, in place of the front and rear frames ordinarily used in the conventional tandem disk harrows, increases the flexibility of the machine and makes it easy to turn and maneuver. Backing the tractor straightens the front and rear sections; the rear disk gangs remain stationary while the front gangs and the center main frame move to the rear. As the front gangs contact the rear gangs, the machine moves backward . . . a close, compact unit that cannot jackknife or buckle as it is backed. This feature, plus the short turning radius, enables the operator to work the ground in tight corners, in small plots, and around stumps, rocks and other obstructions.

Rugged Construction

The No. 15-B frames are of welded steel construction . . . no bolts to come loose. The long-wearing, hard white iron bearings, which carry the load of the disks, are pressure-lubricated . . . a tested combination that gives years of dependable service. The crimped center, vertically ground, heat-treated, heavy-gauge steel disks give years of outstanding service. See page 104 for details.

Angling Adjustment

A gang adjustment bar and lever, easily adjusted by means of a rope from the tractor seat, provides five different angle settings from 0 to 20 degrees . . . an angle to suit practically any soil condition. Just disengage the

lever . . . move the tractor forward or back until the gangs have the right angle . . . then drop the lever into position . . . and the gangs are locked in the new position ready for work. A four-hole adjustment on each of the diagonal drawbars between the front and rear gangs can be used to give added angles to the rear gangs in cases where soil conditions make it advisable for the rear disks to have a different angle from the front disks.

Accurate Trailing . . . Level Working

Diagonal drawbars connecting the front and rear disk gangs force the rear gangs to follow the front gangs properly at all times . . . the rear disks mulching the dirt thrown by the front disks . . . even on turns. A three hole adjustment in the plate which holds the rear gangs together is provided for moving either or both rear gangs to the left or right with relation to the front gangs. All gangs are held in level cutting position — the rear gangs by a telescoping hold-down bar at the back of the machine and each of the front gangs by hold-down rods equipped with adjustable turnbuckles located above the disks.

Regular Equipment

Full-blade scrapers. Solid disks.

Special Equipment

Center tooth. Transport trucks. Cut-out disks.

Specifications

Size	No. of Disks	Net Weight—approx. (lb.)		
		18-in. Disks	20-in. Disks	22-in. Disks
6½-ft.	16	1174	1330	1303
8-ft.	20	1305	1275	1466



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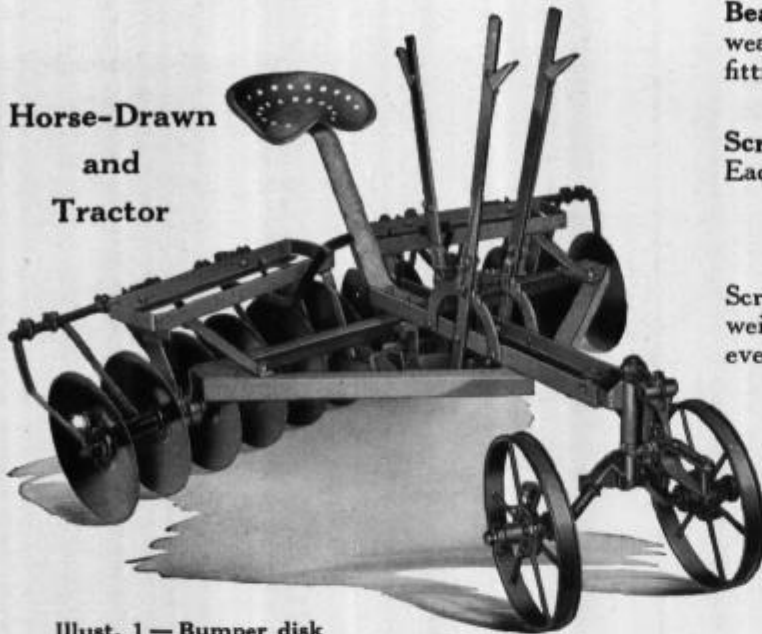
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PRINTED IN UNITED STATES OF AMERICA — MARCH 1948



No. 17 Bumper Disk Harrows

Horse-Drawn
and
Tractor



Illust. 1 — Bumper disk harrow (6-ft.) shown with scrapers, weight boxes, third lever, and forecarriage attachment.

The No. 17 is a sturdily built disk harrow designed primarily as a horse-drawn implement. It is available in sizes from 4 to 10-ft. and with a variety of equipment for both horse and tractor use.

Features of Construction

Gangs have independent action and are adjustable individually to assure uniform work on hillsides and over rough ground.

Levers. Each gang has its own angling lever. A third lever regulates the pressure so that penetration is uniform at both outer and inner ends of the gangs.

The main frame is made of angle steel, cross-braced and bolted to the stub tongue. This construction provides a rigid support for the gangs.

Built-in weight boxes are connected to the gangs by steel standards designed to give maximum clearance.

Disks are available in plain, cut-out, and special (Auburn) types, and in 16 or 18-in. diameter. All disks are heat treated and have crimped centers.

Bearings are double-ring thrust type* made of long-wearing hard white iron. They are provided with fittings for grease gun lubrication.

*Except 4-ft. harrow which has hardwood bushings and grease cup lubrication.

Scrapers—oscillating type controlled by foot levers. Each scraper can be adjusted or replaced individually.

Regular Equipment

Plain disks (16 or 18-in. diameter as ordered). Scrapers (also less scrapers when so ordered). Built-in weight boxes. Third lever depth regulator. Pole. Steel eveners (2, 3, and 4-horse, as shown in table below).

Special Equipment

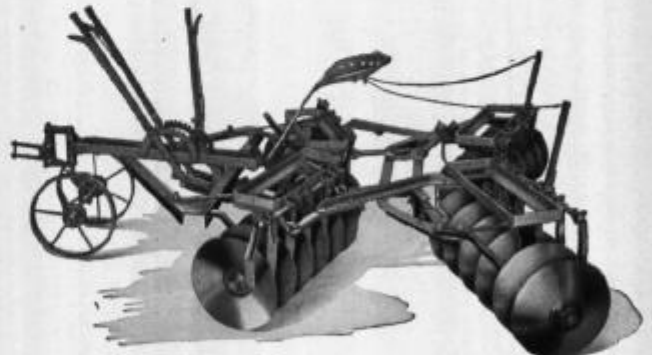
Cut-out disks. Auburn-type (saucer-shaped) disks; also, depth gauges and arbor bolts.

Tractor hitch. Forecarriage. Neckyoke. Extra steel eveners (2, 3, 4, 5, and 6-horse). Center tooth (either narrow point or shovel). Transport truck. Tandem attachments (see table below).

See also pages on *Features, Attachments, and Equipment*.



Illust. 2 — Special tractor hitch. It replaces the regular pole or forecarriage used with horses.



Illust. 3 — No. 17 bumper disk harrow equipped with tandem attachment. This makes an efficient double-action harrow.

Specifications

Size	Number of Disks	Hitch (Regular)	Approx. Net Weight*		Tandem Attachment—Net Weight*	
			16-in. Disks	18-in. Disks	16-in. Disks	18-in. Disks
4-ft.	8	2-horse	394 lb.	416 lb.	324 lb.	349 lb.
5-ft.	10	2-horse	425 lb.	466 lb.	352 lb.	382 lb.
6-ft.	12	3-horse	492 lb.	528 lb.	387 lb.	435 lb.
7-ft.	14	4-horse	575 lb.	605 lb.	431 lb.	471 lb.
8-ft.	16	4-horse	623 lb.	668 lb.	528 lb.	572 lb.
9-ft.	18	4-horse	660 lb.	711 lb.	560 lb.	610 lb.
10-ft.	20	4-horse	692 lb.	742 lb.	596 lb.	651 lb.

*Weights shown include scrapers and weight boxes.



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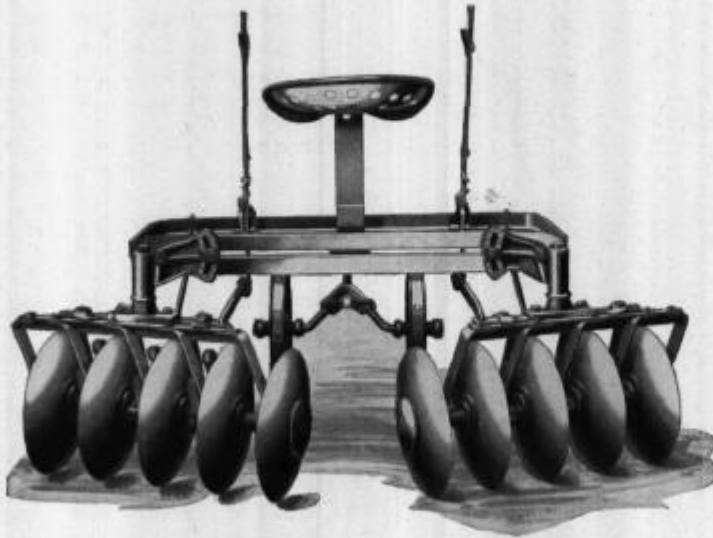


Reversible Disk Harrows

(Horse-Drawn)

**Disks Reversible
for Out-throw and
In-throw**

**3, 4, and 5 ft.
Sizes**



Illust. 1 — Reversible disk harrow, 5-ft. size, shown with gangs set wide and in out-throw position.

The reversible disk harrow is used for cultivating row crops planted on beds, in trenches, or on the level. It is also adapted for use in orchards, vineyards and gardens. The high frame and adjustable gang feature permit cultivating crops that are quite high. For

orchard and vineyard work the disks can be set out to work close to trees and vines.

Features

Gangs are reversible for in-throw or out-throw by simply disconnecting a bracket and turning the gangs to the desired position. The gangs can also be adjusted laterally on the harrow frame and may be tipped up or down for hilling up beds or to work in trenches. The working angle of the disks remains the same regardless of how the gangs are adjusted.

Disks are heat-treated, crimped-center type.

Bearings have two hardwood bushings completely encircling the bearing spool. Bushings are reversible for wear. Grease-cup lubrication is provided.

Steel Stub Tongue reinforces the main frame and permits use of either tongue or special forecarriage.

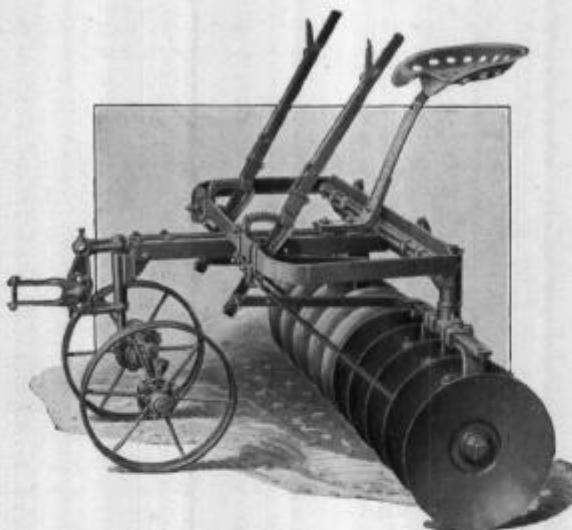
Two Angling Levers permit adjusting the working angle of each gang independently.

Regular Equipment

Pole and 2-horse evener. Scrapers (also less scrapers when so ordered). Plain disks (16 or 18-in. diameter).

Special Equipment

Cut-out disks (16 or 18-in. diameter). Forecarriage. Neckyoke. 3-horse hitch. Thill attachment.



Illust. 2 — Side view of the reversible disk harrow showing forecarriage, which is supplied as special equipment.

Specifications

Size	No. of Disks	Dia. of Disks	Hitch	Extreme Width		Approximate Net Weight	
				In-throw	Out-throw	16-in. Disks	18-in. Disks
3 ft.	6	16 or 18 in.	2 horse	68 in.	55 in.	340 lb.	362 lb.
4 ft.	8	16 or 18 in.	2 horse	68 in.	68 in.	391 lb.	421 lb.
5 ft.	10	16 or 18 in.	2 horse	81 in.	68 in.	414 lb.	450 lb.

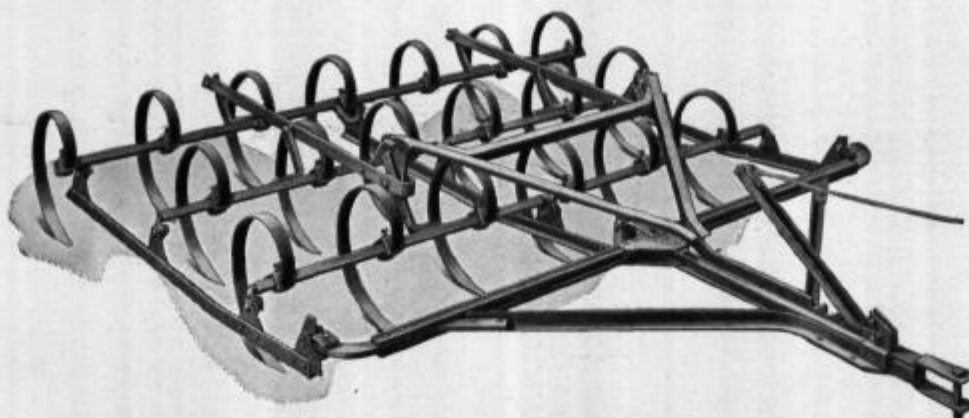
Forecarriage Attachment—Approx. Net Weight, 58 lb.



INTERNATIONAL HARVESTER



Nos. 1 and 2 Tractor Spring-Tooth Harrows



Illust. 1—The No. 2 tractor spring-tooth harrow in the two-section, 19-tooth size. Note that the frame bar between the two sections is a single bar instead of the conventional two bars. This simplified construction reduces the resistance of trash, clods, and other obstructions.

- Strong, non-clogging frame design.
- Tooth bars have flexible, individual pivots—trash automatically shaken free.
- Oil-tempered, $1\frac{3}{4}$ x $\frac{1}{4}$ -in. teeth—held in position by adjustable, all-steel clamps with heavy, cup-point setscrews.
- Automatic hitch on No. 2 harrows—backing the tractor sets teeth for depth . . . pulling the rope raises harrow for transport.

Specifications

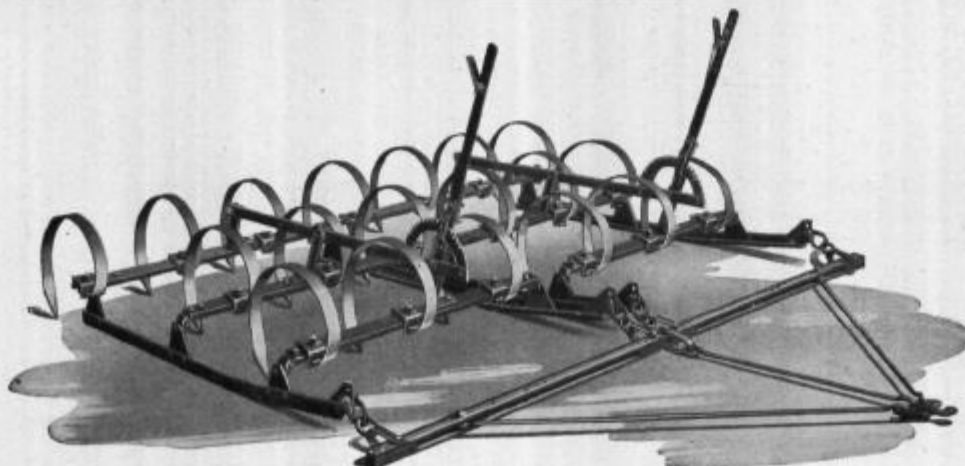
No.	No. Sections	No. Teeth	Cultivating Width	Net Weight (Approx.)
1	1	10	4-ft. 6-in.	201 lb.
1	1	13	5-ft. 8-in.	257 lb.
1	2	19	7-ft. 9-in.	397 lb.
1	2	25	10-ft. 2-in.	511 lb.
1	3	28	11-ft. 10-in.	669 lb.
1	3	37	16-ft. 3-in.	839 lb.
2	2	19	8-ft. 3-in.	448 lb.
2	2	25	10-ft. 9-in.	573 lb.
2	3	28	12-ft.	744 lb.
2	3	37	15-ft. 9-in.	955 lb.

Nos. 1 and 2 tractor spring-tooth harrows are of heavy, durable construction to withstand the strains of tractor operation, and are so designed that they readily clear themselves of trash in fields infested with quack or other pest grasses.

The tooth bars are connected to the side drag bars by means of flexible pivots which cause the teeth to freely oscillate forward and backward and thus greatly facilitate shaking the harrow free of trash. An extra-large amount of clearance is provided below and between the tooth bars. The teeth are spaced wider apart than the teeth of ordinary spring-tooth harrows and have a larger coil.

On the No. 2 tractor spring-tooth harrow the position of the teeth is controlled by a locking latch lever operated by a rope from the tractor seat. The teeth are placed in working position by backing up the tractor until the desired setting is obtained, at which point the latch automatically locks the harrow.

The teeth are raised for transport or for clearing trash by merely pulling the latch rope, without stopping the tractor. The harrow then can be backed up to the point where the trash has been dumped, leaving no uncultivated ground. This feature also permits backing the harrow into corners or next to fences.



Illust. 2—The No. 1 tractor spring-tooth harrow. The levers can be reversed, if desired, for use with horses.

Regular Equipment

P-13979, $\frac{1}{4}$ -in. teeth (quack grass). Drawbar. Power set device on No. 2 harrows.

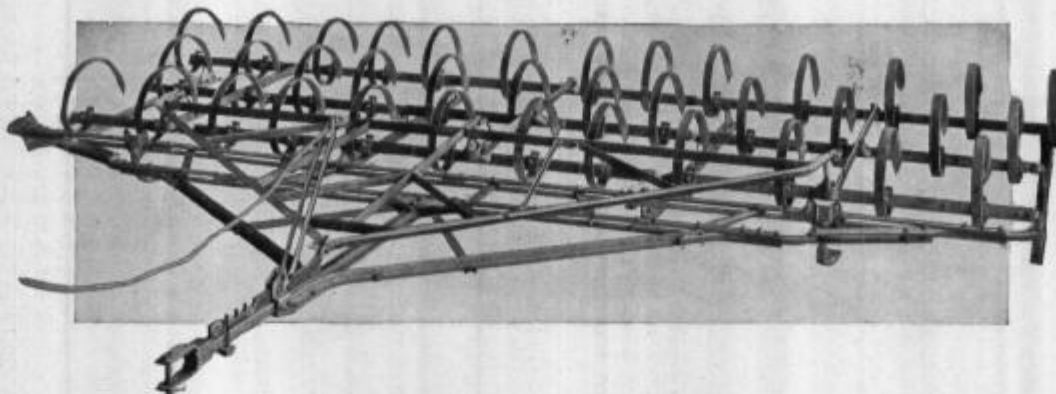
Special Equipment

P-23857, heavy, $\frac{5}{16}$ -in. teeth (quack grass). 11295, $\frac{1}{4}$ -in. alfalfa teeth. Spring teeth for removable points in either P-23538, $\frac{1}{4}$ -in. or P-23858, $\frac{5}{16}$ -in.; quack grass points or reversible points.



Nos. 1 and 2 Tractor Spring-Tooth Harrows

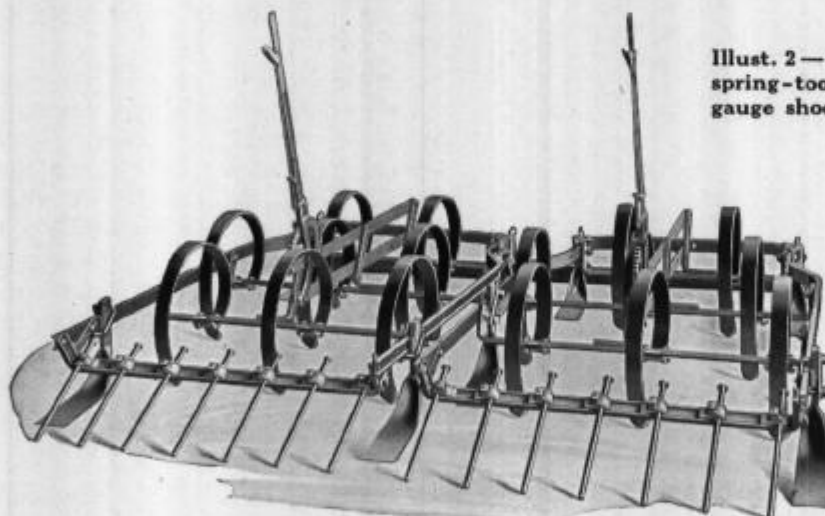
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Illust. 1 — The No. 2, 37-tooth tractor spring-tooth harrow. Cutting width is 15 ft. 9 in.

Combination Spring-Tooth Harrows

(Horse-Drawn and Tractor)



Illust. 2 — Two-section combination spring-tooth harrow shown with gauge shoes.

The combination harrow has a row of heavy trailing teeth that break up and thoroughly pulverize the clods brought to the surface by the spring teeth. Where an exceptionally good job of pulverization without packing is desired the combination harrow is an ideal tool.

Regular Equipment

Channel steel tooth bars. Single point teeth. 2, 3 and 4-section drawbars.

Special Equipment

Heavy spring teeth with single point. Reversible

points on regular or heavy teeth. Alfalfa teeth. Quack grass teeth. Adjustable gauge shoes. Adjustable gauge shoes in lieu of smoothing teeth.

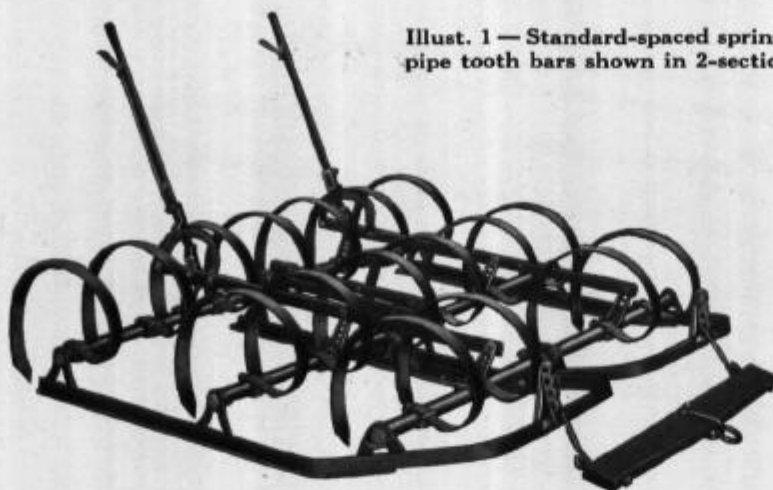
Specifications

No. Teeth	No. Sections	Width	Net Weight (Approx.)
8	1	2-ft. 6-in.	119 lb.
16	2	5-ft. 6-in.	255 lb.
24	3	8-ft. 5-in.	391 lb.
32	4	11-ft.	535 lb.



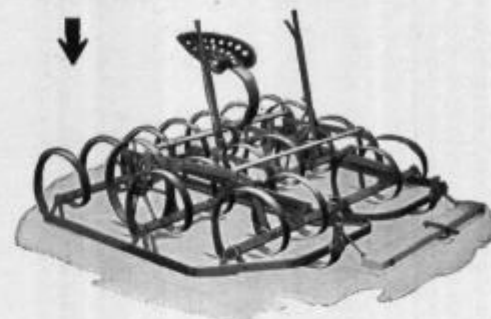
Spring-Tooth Harrows

(Horse and Tractor Drawn)



Illust. 1 — Standard-spaced spring-tooth harrow with round pipe tooth bars shown in 2-section, 17-tooth size.

Illust. 2 — Two-section harrow with sulky attachment.



These harrows will work to a depth of 5 or 6 inches, thoroughly stirring the soil and bringing the large lumps to the surface where they can be pulverized. To hasten the warming of the soil there is nothing better.

The frame gauges the depth of the teeth. The runners have removable shoes which can be replaced at small cost when worn. The levers can be set at the back of the harrow when using horses, or at the front when using a tractor.

The harrows can be supplied either with standard spacing or with wide spacings for use in extremely rank vegetation, as shown in the Specifications. The harrows are regularly equipped with round pipe tooth bars, the teeth being mounted with a strong spanner hitch that puts all the strain on the pipe and none on the bolt. Standard-spaced harrows having channel bars and teeth mounted with U-bolts can also be supplied when ordered.

Regular Equipment

Round pipe tooth bars. Teeth, as ordered. 2, 3 and 4-section wood drawbars (4-section convertible to 3). 9-tooth harrows with or without handles, as ordered.

Special Equipment

Channel tooth bars. Combination drawbars (3 sections convertible to 2). Bent levers. Sulky attachment for 15, 17, and 23-tooth standard-spaced harrows.

Specifications: Standard Spacings

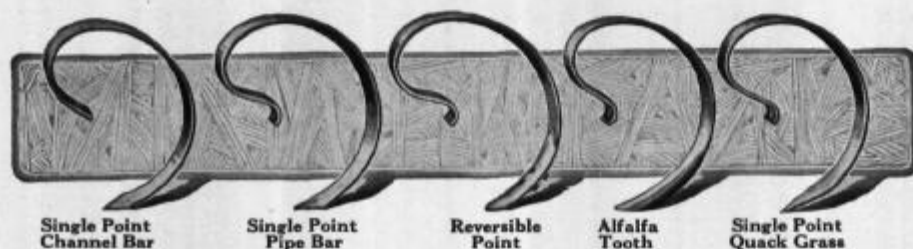
No. Teeth	No. Section	Cultivating Width	Net Weight (Approx.)*
9	1	2-ft. 10-in.	117 lb.
15	2	5-ft. 1-in.	228 lb.
17	2	5-ft. 8-in.	240 lb.
23	2	7-ft. 6-in.	303 lb.
23	3	7-ft. 8-in.	355 lb.
25	3	8-ft. 4-in.	367 lb.
35	3	11-ft. 6-in.	476 lb.
31	4	10-ft. 4-in.	483 lb.
33	4	11-ft. 0-in.	495 lb.
47	4	15-ft. 6-in.	652 lb.
8-tooth center section—no drawbar.....			111 lb.
12-tooth center section—no drawbar.....			150 lb.

*Add 13 lb. if with handles.

Specifications: Wide Spacings

No. Teeth	No. Section	Cultivating Width	Net Weight (Approx.)*
9	1	3-ft. 6-in.	133 lb.
19	2	7-ft. 3-in.	320 lb.
28	3	11-ft. 6-in.	485 lb.

*Add 14 lb. if with handles.

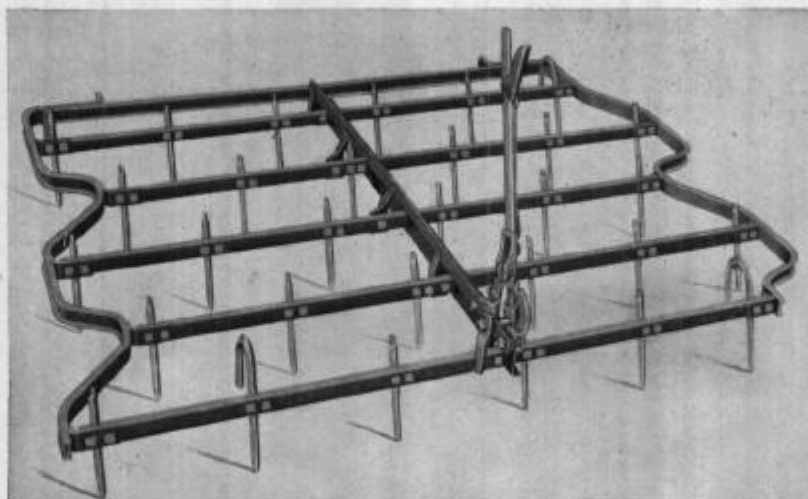


Illust. 3 — Types of spring teeth. Tooth at far left is for channel bar; others are for pipe bar. Orders must specify type wanted.



No. 2 Closed-End Easy-Fold Peg-Tooth Harrows

- Three cross bars provide ample strength.
- "Closed" outside bars protect vines and trees.
- U-section tooth bars—teeth bolted to bars for easy replacement.



Illust. 1 — The No. 2 closed-end peg-tooth harrow.

The No. 2 Easy-Fold closed-end harrows have three cross bars to provide ample strength. These distribute the strains over the entire harrow when one of the teeth strikes a stone.

The outside cross bars are at the ends of the tooth bars. These act as guards to prevent the ends of the tooth bars from damaging trees or vines when working in orchards or vineyards. The outside cross bars of adjacent sections interlock to provide uniform spacing of teeth.

The tooth bars are made of heavy, U-section steel. The teeth are attached with U-bolts, making it easy to replace the teeth or to take up for wear. The corner teeth have runner extensions which carry the harrow off the ground in transport.

The levers fold down flat against the harrow, making it easy to lay end sections over in transport or to stack them neatly in storage.

See also special page on Features and Attachments.

Regular Equipment

Diamond teeth, $\frac{5}{8} \times \frac{7}{8}$ -in. Wood drawbars for 2-section and over. Folding levers.

Special Equipment

Bent levers, for use in orchards, in lieu of straight. Relief spring for use in stony soil. Harrow cart.

Drawbars: 4-section steel folding drawbar (convertible to 3 and 2-section); 3-section (convertible to 2); and 2-section (specify size harrow). Wood drawbars as extra.

Specifications

No. Sections	No. Teeth	Width	Net Weight (Approx.)*
1	25	4-ft. 1-in.	92 lb.
1	30	4-ft. 10-in.	104 lb.
1	35	5-ft. 8-in.	117 lb.
2	50	8-ft. 3-in.	211 lb.
2	60	10-ft.	237 lb.
2	70	11-ft. 8-in.	268 lb.
3	75	12-ft. 6-in.	326 lb.
3	90	15-ft. 1-in.	370 lb.
3	105	17-ft. 9-in.	417 lb.
4	100	16-ft. 10-in.	458 lb.
4	120	20-ft. 3-in.	516 lb.
4	140	23-ft. 9-in.	581 lb.
5	150	25-ft. 4-in.	647 lb.
6	180	30-ft. 5-in.	768 lb.

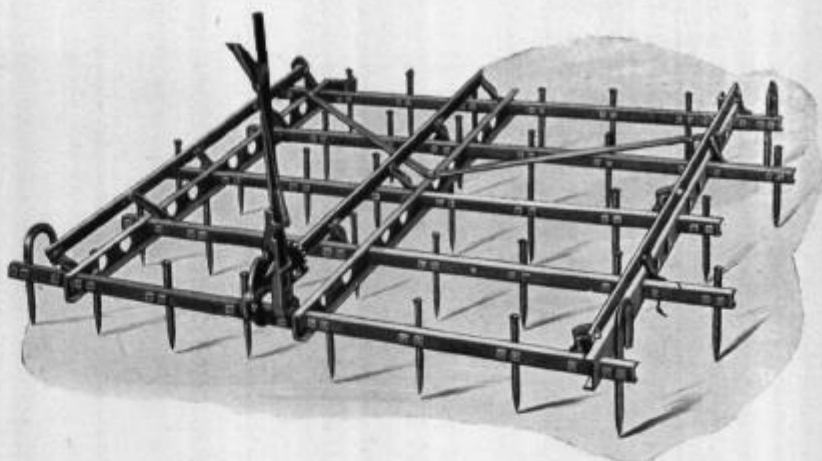
* Weights include wood drawbar on 2-section and larger.



No. 2 Open-End Easy-Fold Peg-Tooth Harrows

(Continued)

- Three cross bars with diagonal braces to distribute strains.
- U-section tooth bars—teeth bolted to bars for easy replacement.
- Folding levers regularly supplied.



Illust. 1 — No. 2 Easy-Fold open-end peg-tooth harrow, 1-section size.

No. 2 open-end harrows, like the No. 2 closed-end, have three cross bars and diagonal braces and three set bars. This construction distributes the strains over the entire harrow when one of the teeth strikes a stone. The tooth bars are made of heavy, U-section steel, the teeth are attached with U-bolts, making it easy to replace the teeth or to take up for wear. The corner teeth have runner extensions which carry the harrow off the ground in transport.

The harrow has folding levers, regularly supplied on all the Easy-Fold harrows.

See also special page on Features and Attachments.

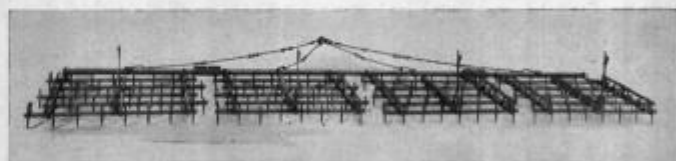
Regular Equipment

Diamond teeth, $\frac{5}{8} \times \frac{7}{8}$ -in. Wood drawbar for 2-section and over. Folding levers.

Special Equipment

Bent levers for use in orchards. Relief spring for use in stony soil. Harrow cart.

Drawbars: 4-section steel folding drawbar (convertible to 3 and 2-section); 3-section (convertible to 2); and 2-section (specify size harrow). Wood drawbar as extra.



Illust. 2 — 4-section No. 2 open-end. Shown with steel folding drawbar, which enables the operator to transport the harrow through a 12-foot gate without uncoupling the sections.

Specifications

No. Sections	No. Teeth	Width	Net Weight (Approx.)
1	30	4-ft. 11-in.	97 lb.
1	35	5-ft. 10-in.	108 lb.
1	40**	5-ft.	107 lb.
2	60	9-ft. 11-in.	223 lb.
2	70	11-ft. 9-in.	250 lb.
2	80**	10-ft. 1-in.	243 lb.
3	90	15-ft.	349 lb.
3	105	17-ft. 10-in.	390 lb.
3	120**	15-ft. 2-in.	379 lb.
4	120	20-ft. 3-in.	488 lb.
4	140	23-ft. 9-in.	545 lb.
4	160**	20-ft. 5-in.	528 lb.
5	150	25-ft. 4-in.	627 lb.
5	200**	25-ft. 6-in.	667 lb.
6	180	30-ft. 5-in.	744 lb.
6	240**	30-ft. 7-in.	792 lb.

* Weights include wood drawbar on 2-section and larger.

** Close-spaced.



INTERNATIONAL HARVESTER



No. 3 Wood-Bar Easy-Fold Peg-Tooth Harrows

The wood-bar harrow is popular wherever a high degree of pulverization is desired. The tooth bars are made of heavy, square, well-seasoned lumber and are bound into a rigid whole by steel bars at the ends. The teeth are $\frac{9}{16}$ -in. square, 9-in. long, and set in the tooth bars $7\frac{1}{2}$ -in. apart. A rivet through the tooth bar at every tooth prevents the bars from splitting.

The levers fold down flat against the harrow, making it easy to lay end sections over in transport or to stack them neatly in storage.

See also special pages on Features and Attachments.

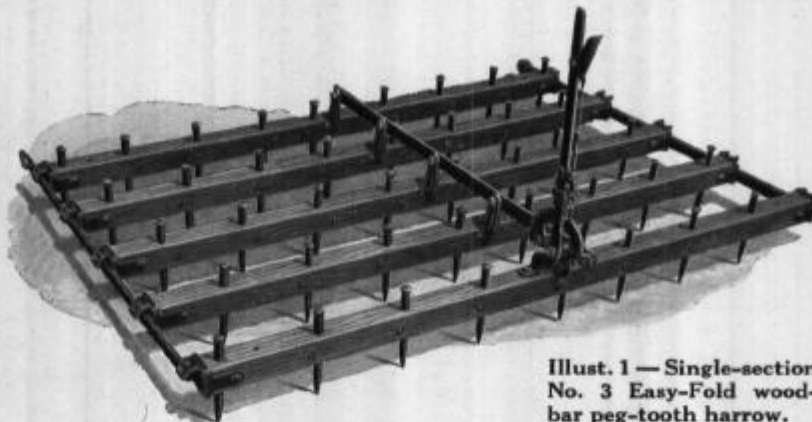
Regular Equipment

Square teeth, $\frac{9}{16}$ -in. Wood drawbars for 2-section and over. Folding levers.

Special Equipment

Bent levers for use in orchards. Relief spring for use in stony soil. Harrow cart.

Drawbars: 4-section steel folding drawbar (convertible



Illust. 1 — Single-section No. 3 Easy-Fold wood-bar peg-tooth harrow.

to 3 and 2-section); 3-section (convertible to 2); and 2-section (specify size harrow). Wood drawbar as extra.

Specifications

No. Sections	No. Teeth	Width	Net Weight (Approx.)*
1	41	4-ft. 9-in.	103 lb.
2	82	10-ft. 1-in.	235 lb.
3	123	15-ft. 5-in.	370 lb.
4	164	20-ft. 11-in.	513 lb.

*Weights include wood drawbars on 2-section and larger.

No. 4 Easy-Fold Peg-Tooth Harrow

The No. 4 is a flexible, compact steel harrow for average soil conditions. The teeth are attached to U-section tooth bars with locknuts and washers, making it a simple matter for the operator himself to replace a damaged tooth. The bars are reversed to keep them from collecting dirt. They are supported on the ends and in the middle by sturdy cross bars which distribute strains and provide for ample flexibility on uneven ground. In transport the cross bars serve as runners.

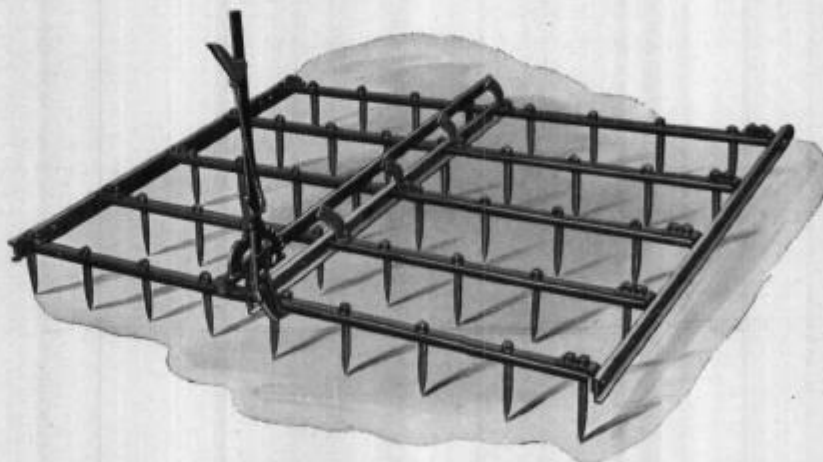
Folding levers make it easy to stack the sections and permit end sections to be laid over when using a steel folding drawbar.

Regular Equipment

Diamond teeth, $\frac{5}{8} \times \frac{7}{8}$ -in. Wood drawbars for 2-section and over. Folding levers.

Special Equipment

4-section steel folding drawbar (convertible to 3 and 2-section); 3-section (convertible to 2); and 2-section (specify size harrow). Wood drawbars as extra. Harrow cart.



Illust. 1 — Single-section No. 4 Easy-Fold peg-tooth harrow.

Specifications

No. Sections	No. Teeth	Width	Net Weight (Approx.)*
1	41	4-ft. 9-in.	96 lb.
2	82	10-ft. 1-in.	192 lb.
3	123	15-ft. 5-in.	288 lb.
4	164	20-ft. 11-in.	384 lb.

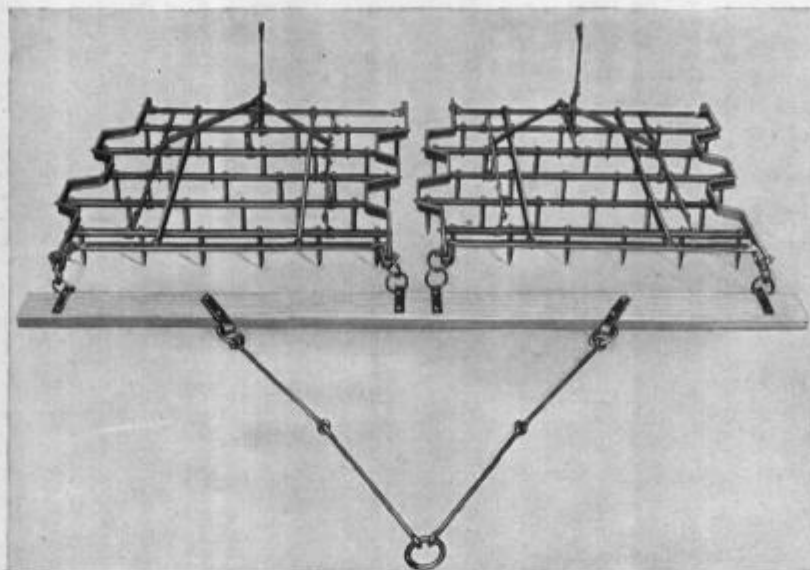
*Weight include wood drawbars on 2-section and over.



INTERNATIONAL HARVESTER



No. 5 Closed-End Easy-Fold Peg-Tooth Harrows



Illust. 1. No. 5 Easy-Fold closed-end peg-tooth harrows have 30-tooth sections.

The No. 5 harrows are strongly built for heavy work. They have four cross bars—two inside and two outside. The outside cross bars close off the ends of the tooth bars to prevent their causing damage when working in orchards or vineyards. Shaping of the outside bars permits adjacent sections to interlock for uniform spacing of teeth. The outside bars also extend to the rear, and have additional holes to permit pulling a leveling bar.

There are two set bars per section. The set levers and quadrants are of extra heavy construction. The levers fold flat for convenience in storage or transport. Transport runners are supplied when ordered.

The teeth are $\frac{3}{4}$ -in. square. They are inserted into holes in the tooth bars, firmly braced by shoulders on the teeth and secured by nuts and lockwashers.

See also special page on Features and Attachments.

- Extra-strong—four cross bars.
- $\frac{3}{4}$ -in. square teeth securely attached to heavy tooth bars.
- Rear extensions for pulling leveling bar.
- Folding levers regularly supplied.

Regular Equipment

$\frac{3}{4}$ x $\frac{3}{4}$ -in. teeth. Wood drawbar for 2 and 3-section. Folding levers.

Special Equipment

Transport runners (4 per section). Harrow cart.

Drawbars: 2-section steel drawbar. 3-section steel folding drawbar (convertible to 2). Wood drawbars as extra.

Specifications

No. Sections	No. Teeth	Width	Net Weight (Approx.)
1	30	5-foot	104 lb.
2	60	10-foot	237 lb.
3	90	15-foot	370 lb.

* Includes wood drawbar on 2 and 3-section.

Illust. 2 — Teeth used on the No. 5 are $\frac{3}{4}$ x $\frac{3}{4}$ -in. Note shoulders which assure rigidity of attachment.



New Southern Closed-End Peg-Tooth Harrows

The New Southern is a closed-end harrow of a design similar to the No. 2 Easy-Fold but lighter in weight and lacking the reinforcing bars. The tooth bars are made of U-section steel and the teeth are attached by U-bolts for easy adjustment or replacement. Corner teeth have runner extensions for transporting the harrow. The levers are of nonfolding type.

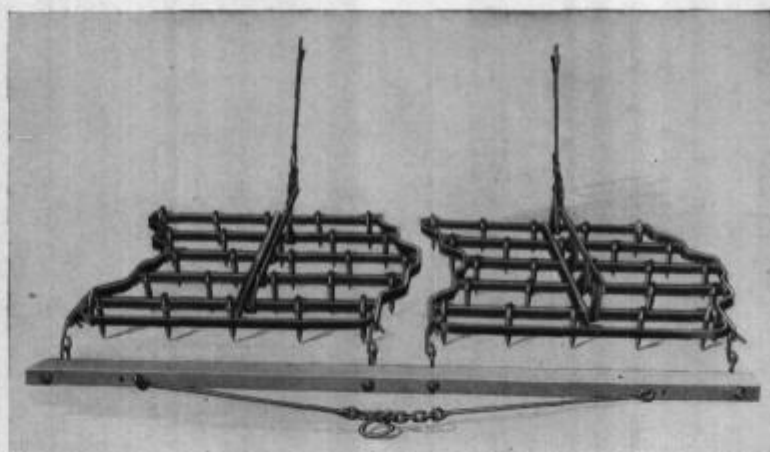
See also special page on Attachments.

Regular Equipment

Diamond teeth, $\frac{5}{8} \times \frac{1}{8}$ -in. Wood drawbars for 2-section and over. Nonfolding levers.

Special Equipment

Bent levers for use in orchards. Relief spring for stony soil. Harrow cart.



Illust. 1 — New Southern peg-tooth harrow.

Specifications

No. Sections	No. Teeth	Width	Net Weight (Approx.)*
1	25	3-ft. 4-in.	82 lb.
1	30	4-ft. 4-in.	91 lb.
2	50	6-ft. 9-in.	185 lb.
2	60	9-ft. 4-in.	207 lb.
3	75	10-ft. 1-in.	293 lb.
3	90	13-ft. 5-in.	341 lb.

*Includes wood drawbar on 2-section and over.

Flexible Peg-Tooth Harrows

The flexible harrow is well suited to stony ground because of its ability to ride over stones without damage. It is also splendid for ground that is littered with cornstalks or other trash. The heavy round tooth bars are joined by flexible correcting links which prevent the bars from moving from side to side and causing teeth to trail each other, yet give ample flexibility for work in rough ground.

The normal vertical position of the teeth can be changed to a 45-degree angle for work in hard soil by attaching the drawbar to the rear of the harrow. The harrow can be rolled up like a carpet if it is desired to carry it in a truck or wagon.

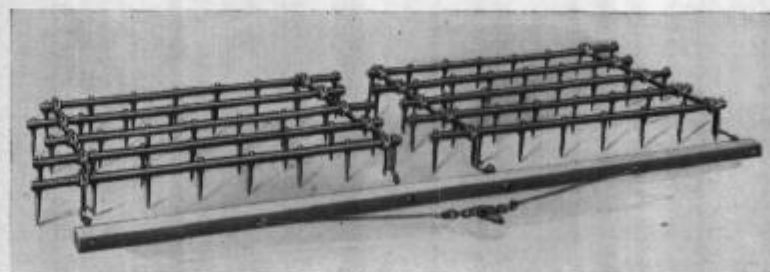
See also special page on Attachments.

Regular Equipment

Diamond teeth, $\frac{5}{8} \times \frac{1}{8}$ -in. Wood drawbars for 2-section and larger.

Special Equipment

Harrow cart. 4-section steel folding drawbar (convertible to 3 and 2-section); 3-section (convertible to 2); and 2-section (specify size harrow). Wood drawbars as extra.



Illust. 2 — Flexible peg-tooth harrow.

Specifications

No. Sections	No. Teeth	Width	Net Weight (Approx.)*
1	40	4-ft. 11-in.	76 lb.
2	80	9-ft. 11-in.	181 lb.
3	120	14-ft. 11-in.	289 lb.
4	160	19-ft. 11-in.	402 lb.
5	200	24-ft. 11-in.	512 lb.
6	240	29-ft. 10-in.	606 lb.

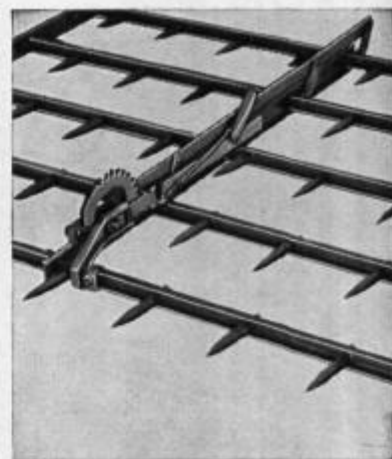
*Includes wood drawbars on 2-section and over.

Peg-Tooth Harrow Features and Attachments

Easy-Folding Feature

All Easy-Fold peg-tooth harrows have folding levers as regular equipment. Easy-Fold harrows stack neatly in storage and thus save space. There is no need to uncouple the sections when going through a 12-foot gate with an Easy-Fold drawbar—just lay the end sections over onto the center sections and go on through! The ratchet-type quadrants engage quickly when the levers are pulled up into working position.

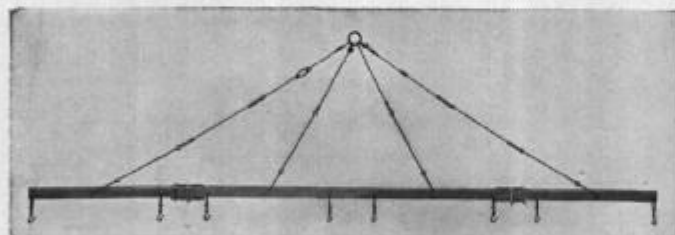
Illust. 1 — This shows the lever of a No. 4 Easy-Fold harrow folded flat for easy handling.



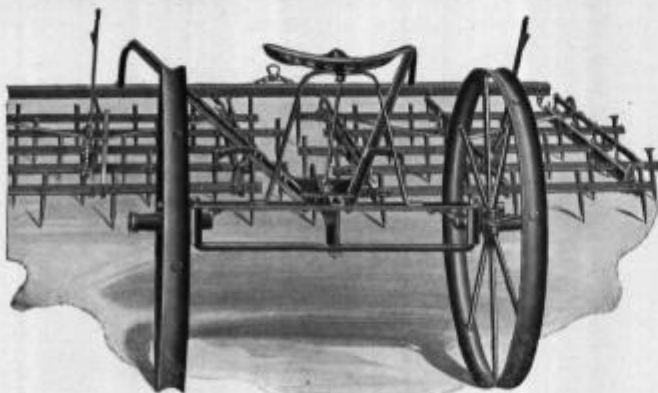
Easy-Fold Steel Drawbars

The steel folding drawbar is a great time-saver when transporting a 3 or 4-section peg-tooth harrow through a 12-foot gate or down a narrow lane. The shackles which attach the single outer sections to the double center section have removable pins, making it possible to quickly convert the drawbar for use as 3 or 2-section, as desired. The outer draw bails have turnbuckles to provide equalized draft on all four sections.

Sizes as shown in Specifications. Special 18-inch hitch extension for drawbars when used with tractors having large wheels and tires.



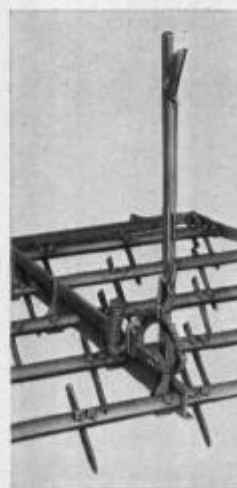
Illust. 2 — The 4-section Easy-Fold steel folding drawbar.



Illust. 3 — This harrow cart can be hitched to any harrow with wood drawbar. It is so balanced that practically no weight is thrown on the harrow drawbar. Approximate weight, 121 lb.

Specifications—Steel Folding Drawbars

No. Sections	Used on Harrow	Net Weight (Approx.)
2	50-tooth No. 2.....	50 lb.
3	75-tooth No. 2.....	81 lb.
4	100-tooth No. 2.....	125 lb.
2	60 and 80-tooth No. 2 and 80-tooth Flexible...	57 lb.
3	90 and 120-tooth No. 2 and 120-tooth Flexible...	93 lb.
4	120 and 160-tooth No. 2 and 160-tooth Flexible...	140 lb.
2	70-tooth No. 2.....	69 lb.
3	105-tooth No. 2.....	115 lb.
4	140-tooth No. 2.....	160 lb.
2	82-tooth Nos. 3 and 4.....	59 lb.
3	123-tooth Nos. 3 and 4.....	97 lb.
4	164-tooth Nos. 3 and 4.....	147 lb.



Illust. 4 — The relief spring attachment prevents damage to the sections when working in stony soils.

Illust. 5 — Bent levers for use in orchards; also handy for quickly lifting a section to clear trash without resetting the angle of the teeth.



Soil Pulverizer

The soil pulverizer packs loose soil, flattens out air spaces, reduces soil blowing, prevents winter killing, and cultivates wheat, alfalfa, or other crops. It well repays its cost in the seed it will save if used immediately after the grain drill or seeder.

For straddling corn and other row crops, wheels may be easily removed and the remaining wheels held in place by spacers supplied on special order.

The gangs of the double-gang pulverizers are yoked close together and attached to the end brackets by pivoted connections which, at normal location, throw two-thirds of the weight on the large front wheels and one-third on the rear. Adjustment is provided for shifting more weight to the front, if desired.

The bearings are virtually oil-tight and dust-proof, and have hard wood bushings which may be reversed as wear occurs.

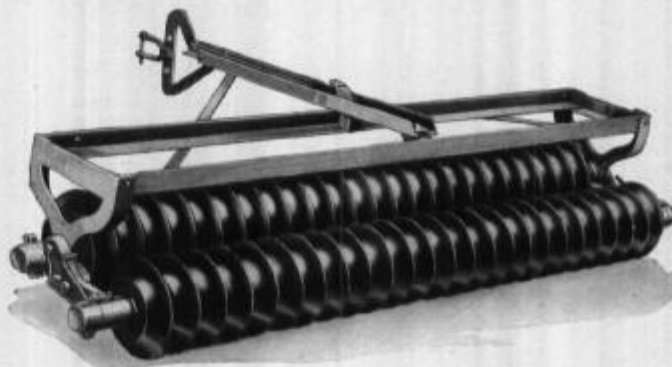
Regular Equipment

15-in. front wheels; 12-in. rear wheels. Steel stub pole and either tractor hitch or stiff pole as ordered. Seat and spring.

Special Equipment

Forecarriage. Extension gangs: No. 101 for single gang; No. 201 for double gang. Broadcast seeder attachment. Special collars for use when center wheels are removed to straddle row crops.

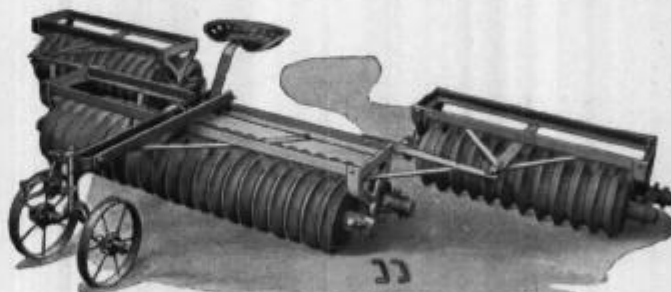
Illust. 4 — The grain drill grass seed attachment makes possible the effective planting of alfalfa, clover and a variety of the grass seeds (see also pages on Grain Drills).



Illust. 1 — The No. 56 double-gang soil pulverizer, shown with tractor hitch.



Illust. 2 — The No. 30 single-gang soil pulverizer, shown with pole.



Illust. 3 — Extension gangs are available for both double-gang (illustrated above) and single-gang, and increase their rolling width by 100 inches. Sold only in pairs.

Specifications

No. of Machine	No. Gangs	Length Overall —In.	Rolling Capacity —In.	No. of Wheels	Net Weight * (Approx.) Lb.
25	Single	60	48	12	532
26	Single	84	72	19	773
27	Single	97	83	22	872
28	Single	109	96	25	977
30	Single	136	116	30	1162
101*	Single	128	100	26	1062
49½	Double	64	51	25	684
49½	Double	75	62	31	800
50	Double	86	73	37	923
52	Double	98	85	43	1039
56	Double	110	97	49	1163
58	Double	126	114	56	1344
60	Double	134	121	60	1437
201*	Double	128	100	50	1032

* Extension gang attachment.



Land Packers and Trailing Packers

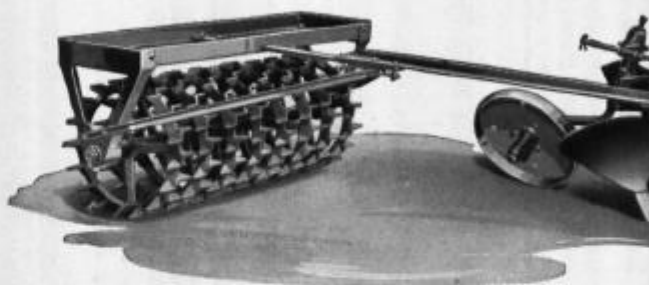
Moisture is the grain grower's most valuable asset, and it is important that as much of it as possible be saved and retained. Packing the soil immediately after plowing quickly closes the air spaces between the furrow slices. The firm seedbed thus produced reduces evaporation and soil blowing to a minimum, assuring speedy, uniform germination of the seed.

When a trailing packer is used with the plow or in conjunction with a plow and press drill, operations are combined for greatest effectiveness. Land packers are for independent packing operation. They are available in sizes from 9 to 19-ft. widths.

Equipment

Lug-type wheels or V-type wheels, as ordered. Weight boxes.

Trailing packers: Hitch for use behind plows. Hitch for use with plow ahead and plow press drill behind (see pages on Plow Press Drills).



Illust. 1 — Trailing packer for use behind a plow. The trailing packer can also be used in conjunction with a plow press drill (with plow ahead and drill behind). Lug-type packer wheels, as illustrated, are considered regular, but V-type wheels can be supplied when so specified.

Land packers: With tractor hitch or with horse hitch and forecarriage, as ordered. (Forecarriage has channel rim wheels with long hubs and adjustable clevis.)

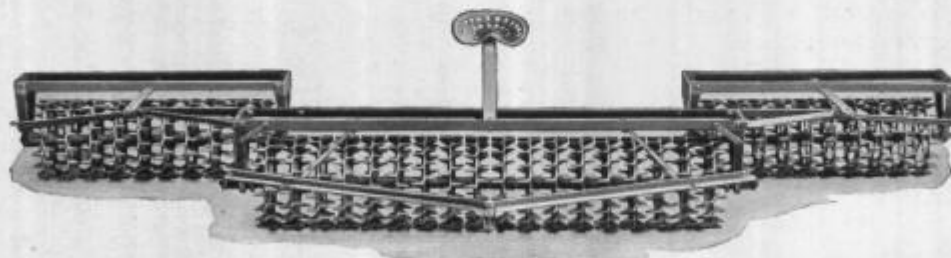
Specifications: Trailing Packers

Machine Type	Wheels	Packing Width—In.	Size Plow Used With	Net Weight (Approx.)
Packer for plows	6	36	2-furrow	400 lb.
Packer for plows	7	48	3-furrow 14-in., 4-furrow 10-in., or 4-furrow 12-in.	475 lb.
Packer for plows	9	60	4-furrow 14-in.	593 lb.
Packer for press drills	7	48	8-furrow	407 lb.
Packer for press drills	9	60	10-furrow	486 lb.

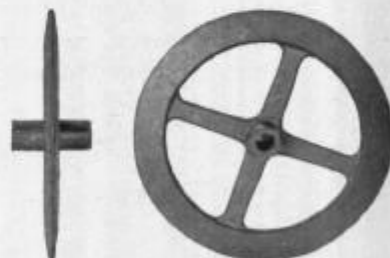
Specifications: Land Packers

Size	No. Section	No. Wheels	Hitch if for Horses	Net Weight (Approx.)	
				With Horse Hitch*	With Tractor Hitch
9-ft.	1	18	2-horse	1544 lb.	1363 lb.
15-ft.	3	30	4-horse	2341 lb.	2106 lb.
17-ft.	3	34	4-horse	2579 lb.	2344 lb.
19-ft.	3	38	6-horse	2860 lb.	2750 lb.

*Horse hitch includes forecarriage.



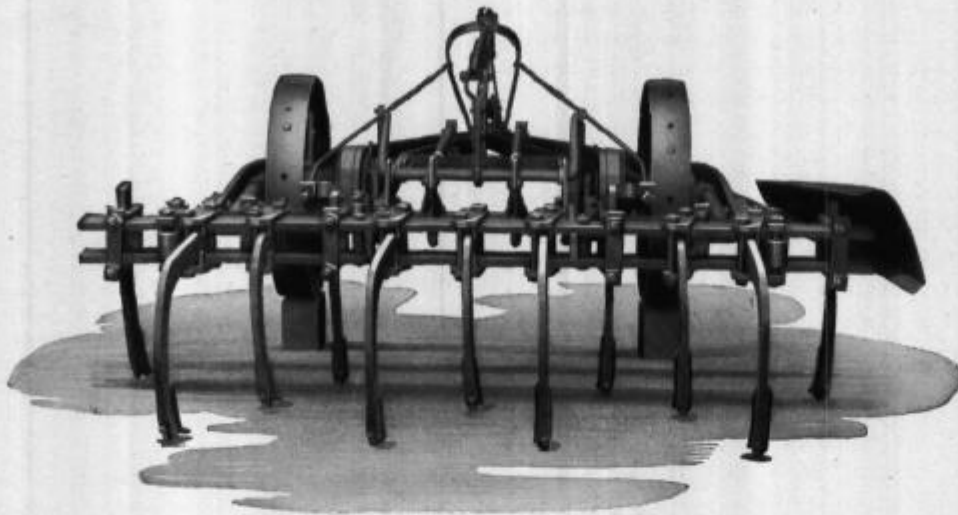
Illust. 2 — This is the 3-section, 19-ft. land packer with tractor hitch. It can be supplied either with lug-type packer wheels (shown here) or with V-type.



Illust. 3 — V-type wheels (end and side views) for use in sticky soils.



No. 2 Tractor Cultivator



Illust. 1 — The No. 2 tractor cultivator.

The No. 2 tractor cultivator will dig into any tillable soil regardless of conditions and create a thoroughly broken and mellow seedbed. It will go clear to the bottom of the seedbed or deeper, loosening the soil to a depth of 9 inches. Where a so-called plowsole or layer of hard soil or shale underlies the seedbed, the tractor cultivator will break it up and greatly increase the moisture-holding ability of the soil.

It is used extensively in orchards, particularly citrus orchards. It is also strongly recommended by potato growers who use it, either with or without plowing, to make a loose, open seedbed. Where sod has been plowed under, the tractor cultivator is used diagonally across the furrow—it tears up the sod without dragging it out.

Does Not Clog

No part of the cultivator projects beyond the ends of the tooth bars, nor is there any lever projecting upward to encounter overhanging branches. The depth is regulated by a crank and screw. The teeth are set in three ranks, spaced to cut furrows 7 inches apart. The 9-inch spacing between the ranks permits trash to pass through easily without clogging. The wheel tread on all sizes is 40 inches.

Heavy Construction

The bars, shanks, and clamps are heavy, high-quality steel. Heavy clamps with $\frac{3}{4}$ -in. bolts hold the shanks in the tooth bars. Power-lift devices of dirt-proof

- For deep tillage—loosens soil to 9-in. depth . . . breaks up plow sole or hardpan.
- For use in orchards and vineyards . . . potato land . . . irrigated fields . . . plowed sod.

design are provided on both wheels. The trip rope puts both power-lift clutches into action simultaneously. A fast, square lift is thereby assured.

Specifications

Size	Equipment	Net Weight (Approx.)
5-ft.	9 regular standards.	911 lb.
5-ft.	9 adjustable standards.	997 lb.
6-ft.	11 regular standards.	975 lb.
7-ft.	13 regular standards.	1085 lb.
8-ft.	15 regular standards.	1157 lb.
Attachments		
6-ft.	Irrigating tool bars with 3 shanks and clamps.	196 lb.
9-ft.	Irrigating tool bars with 4 shanks and clamps.	266 lb.
	No. 1 Subsoil attachment.	34 lb.
	No. 2 Subsoil attachment.	117 lb.
	No. 3 Subsoil attachment.	99 lb.
	No. 2 Moldboard hiller with standard, each.	33 lb.
	No. 7 Moldboard hiller less standard.	19 lb.
	Border disk attachment.	288 lb.
	Middlebuster att. for 5 and 6-foot with 3 No. 6-B bottoms, tool bar and extra braces.	375 lb.
	Middlebuster att. for 7 and 8-foot with 3 No. 6-B bottoms.	205 lb.



No. 2 Tractor Cultivator

(Continued)

Attachments

The No. 2, 10-in. moldboard hiller is usually used in sets of two, three, or four.

The No. 1 subsoiler attachment attaches to the regular tool bars. The No. 2 is a very heavy attachment, also for regular subsoiling work. The No. 3 is similar to the No. 1, but heavier, and with the same clamp as the No. 2. When the No. 1 is wanted for regular subsoiling operations, only one should be used, but when it is wanted for deep tillage operations, as in preparing potato ground, five should be ordered for the 7-foot cultivator; seven for the 8-foot.

The middlebuster attachment for the 5 and 6-foot sizes is considerably heavier than that for the 7 and 8-foot. This is because it is necessary to supply the regular 7 and 8-foot tool bar and special braces for using the three middle buster bottoms on the 5 and 6-foot sizes.

The alfalfa renovator shovels can be used on either the regular shanks or the adjustable shank as supplied on the 5-foot cultivator for vineyard use.

Regular Equipment

1½-in. double point shovels. 5-ft. with either regular or adjustable standards, as specified; other sizes with regular standards. End shield. POTH-95 rigid tractor hitch.

Special Equipment

Heavy-duty shovels. Alfalfa renovator shovels, Joyce-type heavy-duty sweeps (5/16-in.), with bolts, in 12, 14, 16 and 18 in. POTH-96 spring release hitch.

Other attachments as shown in Specifications.

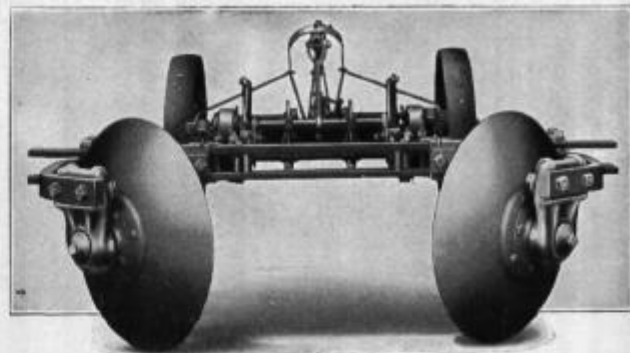


Illust. 1—The No. 2 moldboard hiller attachment consists of a 10-inch hiller with moldboard extension and special curved shank. The No. 7 moldboard hiller (not shown) comes without shanks.

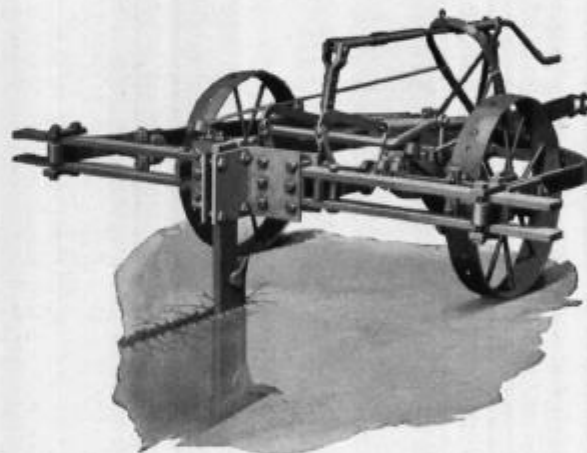


Illust. 2—Alfalfa renovator tooth.

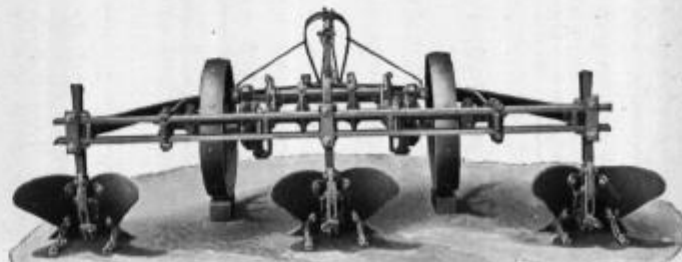
Illust. 3—No. 1 subsoil attachment.



Illust. 4—No. 2 tractor cultivator with border disk attachment.



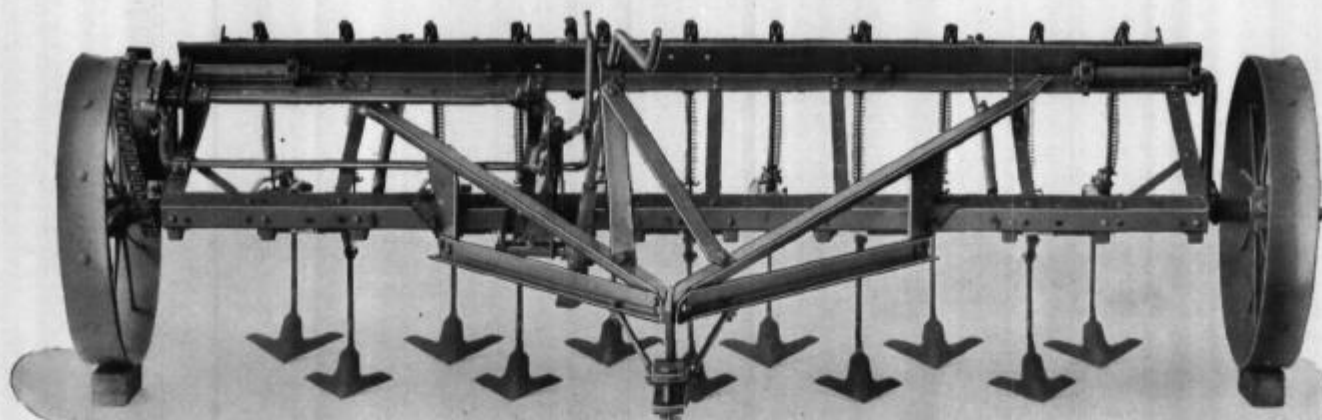
Illust. 5—Tractor cultivator equipped with No. 2 subsoil attachment. Under favorable conditions, this equipment can be set to work at a depth of 15 to 17 inches.



Illust. 6—Tractor cultivator with middlebuster attachment.



No. 8 Field Cultivator



Illust. 1 — The No. 8 field cultivator. This is the 8½-ft. with tractor hitch and equipped with stiff teeth and duckfoot shovels.

- For low cost seedbed preparation and weed eradication . . . for summer fallow . . . for subsurface tillage.
- Gangs and ground tools for every job.

Only early, frequent and persistent cultivation will kill noxious weeds such as quack grass, Johnson grass, creeping Jenny, leafy spurge, etc. For low-cost eradication of these weeds the No. 8 field cultivator is unsurpassed. In regions of low average rainfall it not only kills weeds quickly but leaves a roughened, cloddy surface that holds snow, absorbs moisture, and effectively retards evaporation.

Under most conditions, even though the surface soil may be quite dry and pulverized, the teeth of the No. 8 dig deep enough to bring clods to the surface. The valuable loose topsoil sifts down below the clods where there is much less possibility of its being carried away either by heavy winds or sudden floods of rain.

When equipped with spring teeth the No. 8 is very effective in preparing seedbeds. The lifting action of the spring teeth is particularly beneficial in a late, cold spring, breaking big clods and stirring the soil deeply so that air can circulate throughout the seedbed. This

work can often be done in soil that would not permit the use of other tillage tools.

Gangs

The machine can be supplied with gangs carrying spring teeth, stiff teeth, or wide-spaced subsurface sweeps. Spring-tooth gangs are generally preferred for tillage work and soil mulching, especially in light and mellow soils, and for their effectiveness in eradicating such perennials as quack grass and couch grass. The stiff-tooth gangs have automatic trips to protect them against breakage when rocks or other objects are encountered.

The heavy spring teeth and stiff teeth interchange on the same gangs. The man who needs stiff teeth for summer fallow and weed eradication and spring teeth for general tillage can thus use the same machine for both purposes.

For use where trash conditions are severe the field cultivator can be supplied with stiff-tooth gangs in three ranks. The additional clearance thus provided permits easy passage of trash and prevents clogging. Extension gangs to mount teeth behind the cultivator wheels for working close to fences are available on special order for the 5½, 7, 8½ and 10-ft. sizes.

Shovels and sweeps for use with these gangs are described on an adjacent page.

Specifications

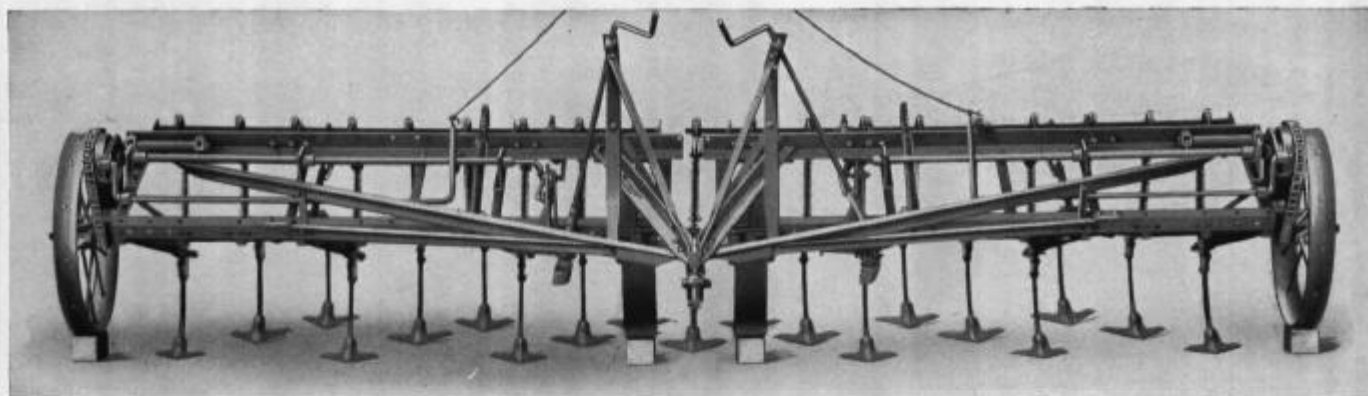
Size	Number of Teeth			Net Weight (Approx.)*		
	Stiff (9-in. Spacing)	Spring		Stiff Teeth 9-in. Spacing	Spring Teeth	
		9-in. Spacing	6-in. Spacing		9-in. Spacing	6-in. Spacing
5½-ft.	7	7	11	773 lb.	823 lb.	830 lb.
7 -ft.	9	9	14	922 lb.	948 lb.	954 lb.
8½-ft.	11	11	17	1054 lb.	1127 lb.	1140 lb.
10 -ft.	13	13	20	1165 lb.	1260 lb.	1276 lb.
12 -ft.	16	16	24	1563 lb.	1629 lb.	1665 lb.
14 -ft.	19	..	28	1911 lb.	.....	2042 lb.

* Weight with tractor hitch, power lift, and depth regulator.



No. 8 Field Cultivator

(Continued)



Illust. 1 — This is the 14-ft. duplex. A flexible connection at the center assures a good cultivating job in irregular ground.

Subsurface Gangs

The subsurface tillage gangs and sweeps enable the user to cultivate the soil thoroughly without turning it over or burying any of the crop residues. By keeping the trash on the surface the soil is well protected against blowing and water run-off. Absorption of water is greatly increased and there is greater storage capacity because of reduced evaporation. The subsurface gangs are spaced 18-in. apart in two ranks, with 20-inch sweeps on the forward gangs and 24-inch on the rear.

Regular Equipment

Choice of shovels and sweeps on all sizes.

Sizes: 5½, 7, 8½, 10-ft. and 12-ft. sizes with choice of stiff-tooth gangs (9-in. spacing) or heavy spring-tooth gangs (either 6-in. or 9-in. spacing). *For tractor operation:* 5½, 7, 8½ and 10-ft. with choice of tractor hitch and hand lift, or tractor hitch, power lift and depth regulator; and 12-ft. with power lift and depth regulator. *For horse-drawn:* 5½-ft. with 3-horse hitch, 7-ft. with 4-horse hitch, and 8 and 10-ft. with 6-horse hitch, and with seat and hand lift, with seat, hand lift and tongue truck, or with seat and power lift. *14-ft. duplex* with two center wheels, tractor hitch, power lift and depth regulator and with choice of either stiff-tooth gangs (9-in. spacing) or spring-tooth gangs (6-in. spacing). *Machine for subsurface tillage:* 5½, 7, 8½ and 10-ft. with tractor hitch, power lift, depth regulator and Lincoln-type sweeps at 18-in. spacing (20-in. front and 24-in. rear).

Special Equipment

Three-rank stiff-tooth gangs with extra-long drawbars (for work in heavy trash). Stiff-tooth gang extensions for 5½, 7, 8½ and 10-ft. Gang conversions. Double power lift with two regulators and divided rockshaft for 10-ft. tractor-hitch machine. Hand and power lifts. Depth regulators. Rear hitch for 8½ and 12-ft. for use in trailing grain drill. Wheel scrapers. Horse hitches. Tractor hitches. Tongue truck. Hitches for use with tongue truck.



Illust. 2 — Heavy spring teeth hold rigidly to the desired depth of cultivation. The springs are adjustable to compensate for wear of the points. Available either in 6-in. spacing (shown above) or in 9-in.



Illust. 3 — Two-rank stiff-tooth gangs have ample trash clearance. Pressure is controlled by a heavy spring. Sweeps may be adjusted for trip and pitch. Three rank stiff-tooth gangs are available for use where trash is extremely heavy.

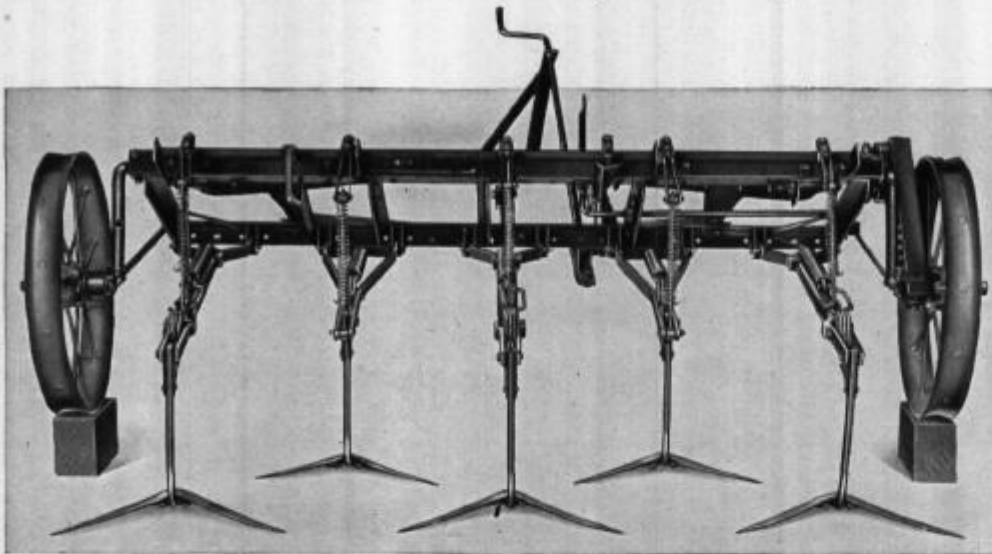


Illust. 4 — The subsurface sweeps are bolted to small frogs welded to narrow shanks. This construction produces a very level job and a minimum of trenching.



No. 8 Field Cultivator

(Continued)



Illust. 1—The 7-ft. field cultivator equipped with subsurface gangs and sweeps.



Illust. 2 (right) — Extension gangs for additional cutting width are available on special order for 5½, 7, 8½ and 10-ft. stiff-tooth machines (either two or three-rank gangs).

Shovels and Sweeps

A wide variety of points, shovels and sweeps are available for use with No. 8 field cultivators, as shown in Illust. 4. In the top row, left, is F-14156, a 1½-inch reversible point for general tillage and weed eradication, recommended for exceptionally hard soil. FA-14157 and F-17227 are 1¾-inch points, recommended for pulling quack grass. F-14280 is used for general tillage. F-14154 is popular for preparing seedbeds on fall-plowed land. F-14155 is a general tillage point.

F-14281 is used extensively in summer-fallowing and similar work in soft ground. F-14159 is a thistle point.

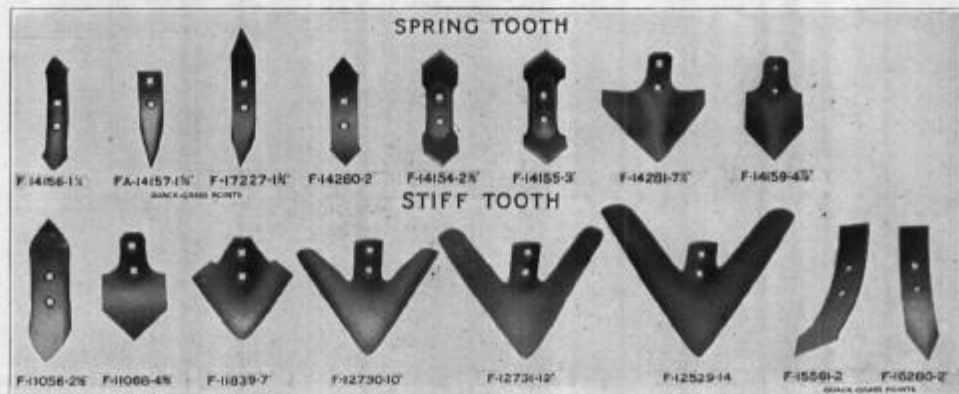
In the bottom row, left, is F-11056, which is a general tillage point—a good weed killer where a wider point offers too much resistance. F-11068 is used for general tillage and weed killing where the soil is not too hard.

F-12730, 12731, and 12529 are 10, 12, and 14-inch sweeps or duckfoots (¾-in. thick), great weed killers for summer-fallow land, sometimes used in combination with narrower points. Heavy-duty sweeps (¾-in. thick) in the same sizes are available under numbers F-17113, F-17114, and F-17115 respectively.

F-15561 and F-16280 are special quack-grass points. F-16280 is especially popular for quack-grass eradication. It has a long curved face similar to 15561, but the point is rounded similarly to the point of FA-14157.



Illust. 3 — Forecarriage and power lift are available for use with horse hitch.

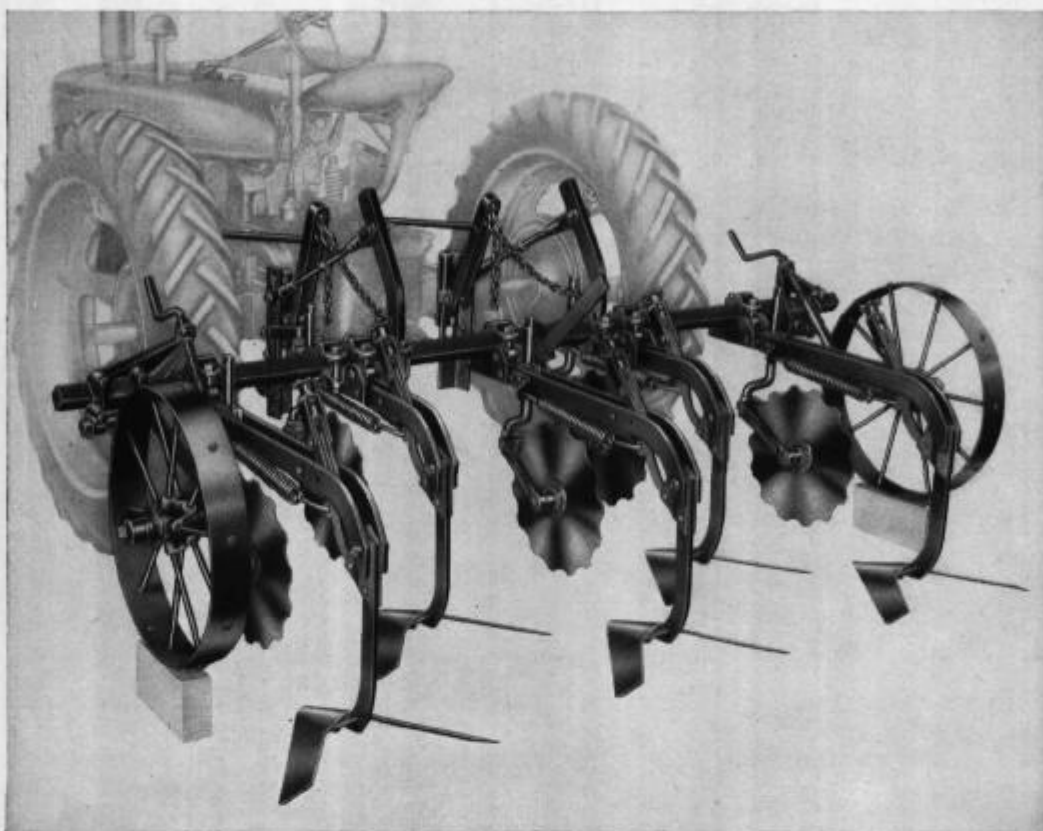


Illust. 4—Shovels and points which can be supplied for stiff-tooth and spring-tooth gangs.



HM-17 Subsurface Tractor Cultivator

(For Farmall H, M and MD Tractors)



Illust. 1 — The HM-17 is regularly equipped with spring-release standards, 24-inch sweeps, 18-inch notched rolling colters, and steel-tire gauge wheels.

- Subsurface cultivation . . . prevents soil erosion due to wind and rain. Can be converted for tillage and other cultivating operations.
- Raised and lowered hydraulically.
- Quick-change . . . connected to drawbar supports.
- Sweeps always at proper pitch at any depth.

The HM-17 is a direct-connected subsurface cultivator for use on the Farmall H, M and MD tractors equipped with Farmall Lift-All.

The machine consists of a long 2-inch square tool bar to which are attached five spring-release standards equipped regularly with 24-inch sweeps and 18-inch notched rolling colters. 22-inch sweeps are available as special equipment. The machine is regularly supplied with two steel-tire gauge wheels. Pneumatic-tire gauge wheels are available as special equipment. The subsurface gangs are removable and may be replaced by heavy 1-inch square stock coiled springs with double-point shovels which are available as special equipment.

Two gauge wheels mounted on the tool bar assure a uniform cultivating depth in irregular terrain. A screw-type adjustment on each gauge wheel permits setting the gauge wheels to meet varying soil conditions and farming practices. The wheels may be mounted in front of, or behind, the tool bar. When set in the forward position, the ground working units can be shifted on the tool bar to eliminate tracks left by the gauge wheels.

Regular Equipment

24-in. sweeps. Steel-tire gauge wheels. Notched 18-inch rolling colters. Drop retarding valves (for use with hydraulic cylinders).

Special Equipment

22-inch sweeps. Pneumatic-tire gauge wheels (less tires and tubes). Coiled spring-tooth attachment.

Specifications

No.	Description	Net Weight (Approx.)
HM-17	Sub-surface tractor cultivator.....	1105 lb.



INTERNATIONAL HARVESTER

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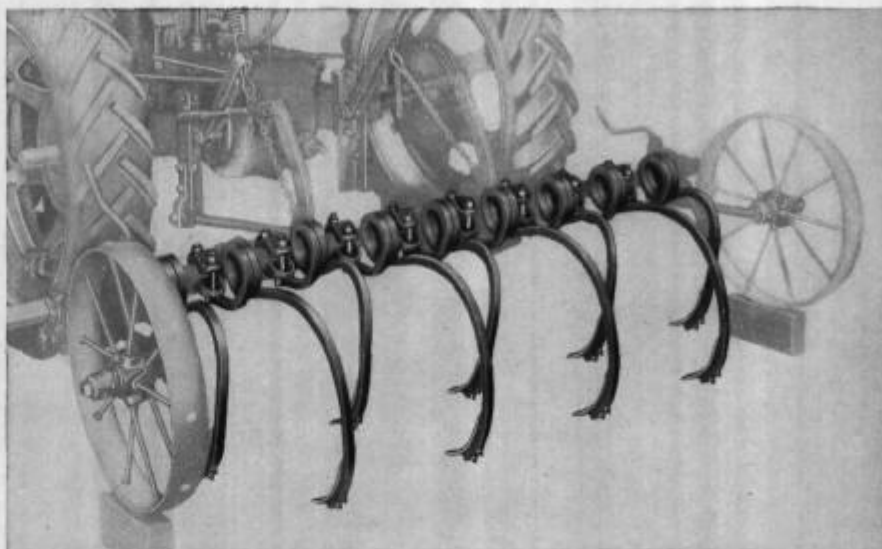


HM-17 Subsurface Tractor Cultivator

For Farmall H, M and MD Tractors (Continued)

Quick-Change

The HM-17 is quickly and easily attached by slip-on brackets to the tractor drawbar quick-change supports. A support stand holds the cultivator in position so the tractor can be backed up to the cultivator. The slip-on brackets are then hooked onto the hinged bolts of the drawbar quick-change supports. Tightening of four nuts secures the cultivator in place. Next it is a simple job to connect the control rods to the Lift-All cylinders which are attached to the forward side of the tractor drawbar quick-change supports.



Illust. 1—Coiled spring teeth are available as special equipment for the HM-17.

Sweeps Always at Proper Pitch

The strong tool bar is attached by parallel-action linkage to two slip-on brackets. Each of the spring-release standards which are attached to the tool bar has a screw-type adjustment which permits changing the pitch of the individual subsurface sweep . . . enabling the operator to set all sweeps at the same pitch. Once all sweeps have the same pitch, screw-type adjusting rods in the parallel linkage permit changing the pitch of all five sweeps to any desired setting. The parallel-action linkage assures that the sweeps, once correctly set, always work at the correct pitch regardless of the depth at which they are working. This is important to obtain a good job of surface cultivation and makes it unnecessary to adjust the ground tools when changing depths. The sweeps are firmly bolted to rigid braces that extend horizontally from the sides of the standards. These firm connections keep the sweeps working in a level position.

Cultivator is Versatile Machine

The HM-17 Subsurface Cultivator, when regularly equipped with 24-inch sweeps and notched rolling colters, conforms to accepted soil conservation practices. The sweeps work below the surface of the ground, cutting weed roots and mulching the soil. At the same time, the

surface is left flat and trash, such as stubble, is left on the top of the ground, preventing soil erosion due to wind and rain. The rolling colters cut the trash ahead of the sweeps, assuring good trash clearance between the gangs.

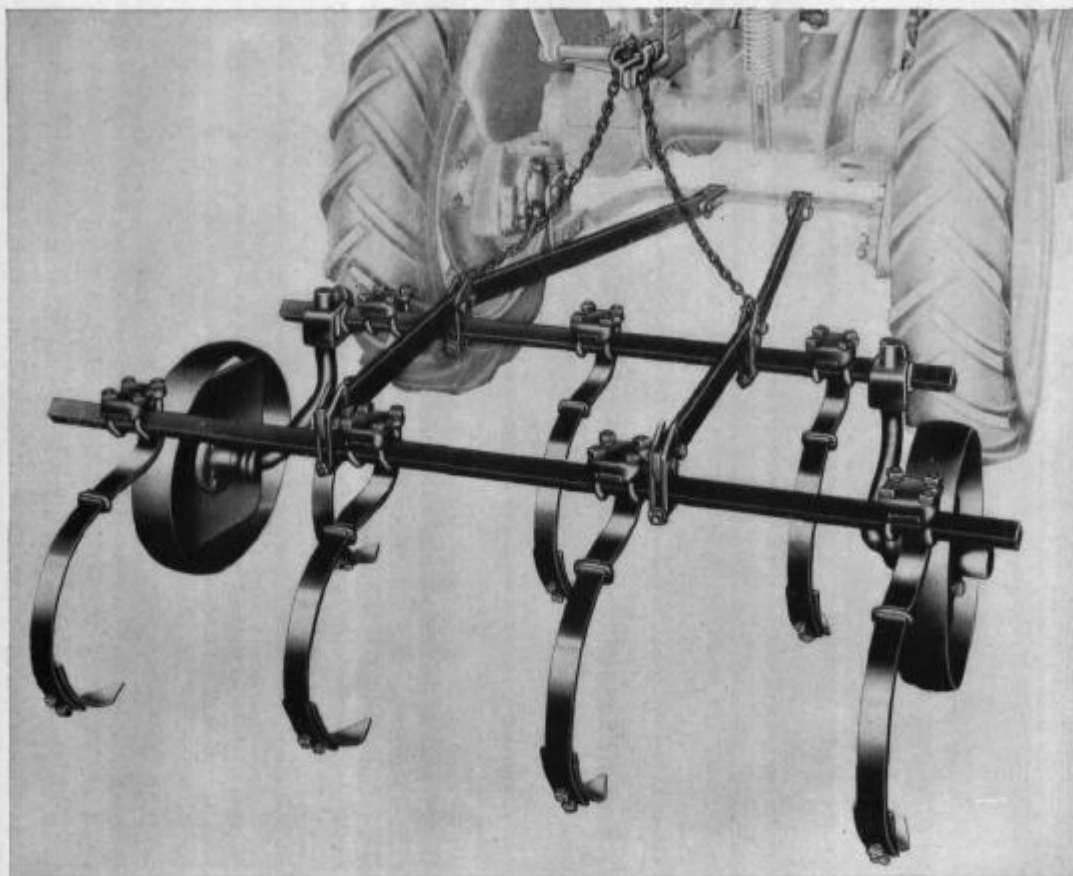
The HM-17, when equipped with the coiled spring-tooth attachment, has a wide variety of applications. Because various types of ground tools can be used on the teeth the cultivator will do an excellent job of summer fallowing, preparing seed beds, alfalfa renovating, quack grass eradication, and bind weed control.

Farmall Lift-All

Farmall Lift-All provides hydraulic power at the operator's fingertips and gives easy, instantaneous control to raise and lower the cultivator. Due to the fact that the cultivator is completely lifted off the ground it is just as maneuverable as the tractor. Two 2¼-inch diameter hydraulic cylinders are required for operating this machine but will be furnished only when ordered because the owner may already have purchased them with some other Farmall equipment. Drop retarding valves for use with the hydraulic cylinders are furnished with the machine. These valves retard the dropping action of the machine when it is lowered to the ground . . . thus easing the machine to the ground and protecting the ground working tools.



Farmall Cub Cub-3 Spring-Tooth Field Cultivator



Illust. 1 — The Cub-3 spring-tooth field cultivator. It is pulled from the reversible drawbar which is placed in the forward position.

- Strong construction.
- Lifts completely off the ground.
- Easily maneuvered in small and irregularly shaped fields.
- Two-gauge wheels control operating depth.
- Raised and lowered by Touch-Control or manual control.
- Replaceable teeth.
- Non-clogging design.

Regular Equipment

Two gauge wheels (steel tires). Seven spring teeth with shovels. Two square tool bars ($1\frac{1}{4}$ inches).

Special Equipment

Pneumatic gauge wheels, for 4-9-inch, 4-ply tires.

The Cub-3 spring-tooth field cultivator is a one-section, seven-tooth, 54-inch wide unit designed for mulching the soil, and for removing quack and other noxious grasses. The teeth are attached to two $1\frac{1}{4}$ -inch parallel, square tool bars.

Two steel gauge wheels control the operating depth. Gauge wheels with pneumatic tires can be obtained in place of the steel ones.

Teeth are spaced well apart to avoid clogging, and the tool bars provide ample clearance. However, any accumulation of trash can be readily cleared by simply lifting the unit with the hydraulic Touch-Control or the manual control lever.

Specifications

No. Teeth	No. Sections	UNIVERSAL UNITS REQUIRED		Width	Net Weight (Approx.)
		Touch-Control	Manual Control		
7	1	No. 512 652 R92 Rear Rockshaft	No. 511 893 R92 Raising Lever and Rear Rockshaft	54 in.	239 lb.





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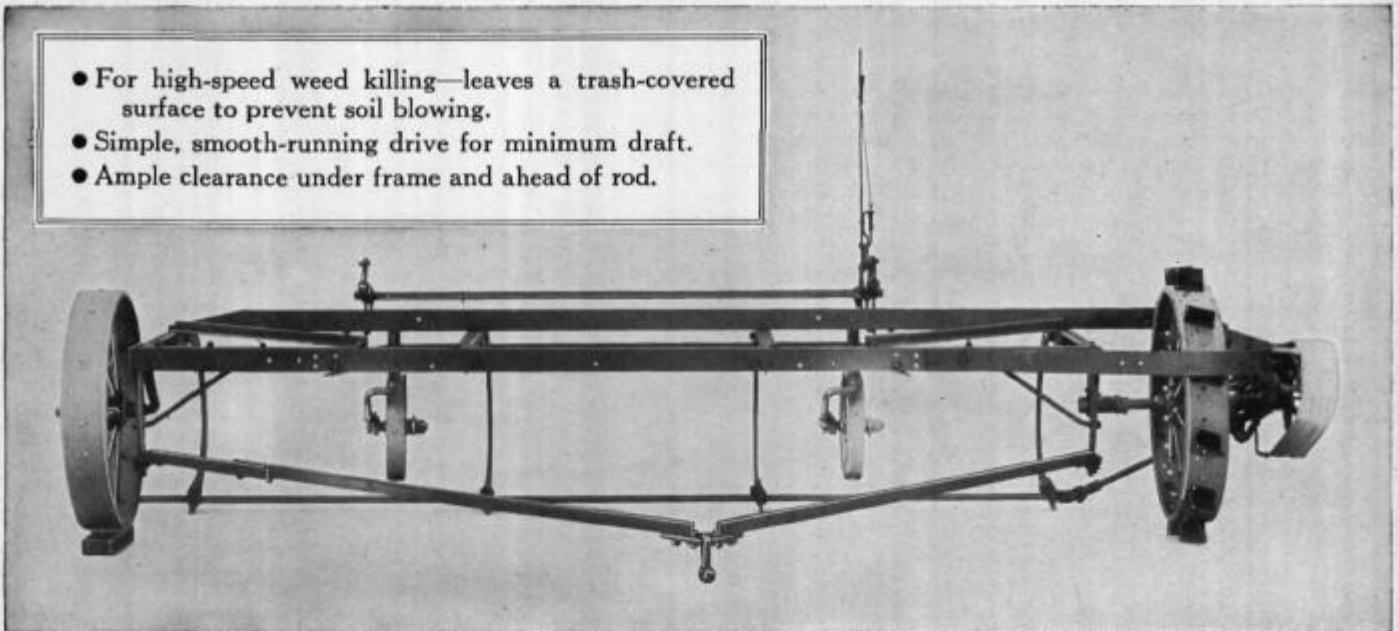
124-D

PRINTED IN UNITED STATES OF AMERICA—MARCH 1949



No. 5 Rod Weeder

- For high-speed weed killing—leaves a trash-covered surface to prevent soil blowing.
- Simple, smooth-running drive for minimum draft.
- Ample clearance under frame and ahead of rod.



Illust. 1 — The 12-ft. single-section No. 5 rod weeder, as regularly equipped with plain tractor hitch, transport frame and wheels, and lever-type depth regulator. The high-clearance frame is well adapted for work under difficult conditions.

International Harvester rod weeders are well known for their ability to do a quick and thorough job of destroying weeds. They get them out, roots and all, and leave a trash-covered surface which is well protected against soil blowing. The rod, which revolves slowly to keep it from gathering weeds, is pulled just under the surface and through every foot of the field—it gets *all* the weeds.

The high-clearance frame of the No. 5 weeder is rigidly braced with rail steel angle iron. The weeder rod is located well to the rear for extra trash clearance. The simple drive mechanism is built for light draft and efficient service. The drive shaft has a self-aligning bearing at the upper end, and the universal sleeves and knuckles are joined by case-hardened, electric-welded pins. The sturdy main wheels have 6-in. tires.

Regular Equipment

Transport (frame and wheels). Lever depth regulators. Angle lugs on drive wheels.

Plain tractor hitch on 9, 10, and 12-ft. single-section machines. Cable hitch on 18, 20, and 24-ft. duplex, and on 20 and 36-ft. triplex.

Round weeder rod with adjustable points, or square weeder rod with adjustable points, as specified.

Special Equipment

Seat and footboard attachment for single section.

Platform plank. Tractor-type spade lugs for drive wheels (12 to a set). 10-tooth sprocket for universal joint shaft to increase speed of weeder rod. Endwise transport attachment.

Hitches: Tractor hitch with screw depth regulator; also cushion spring. Right-hand drive and hitch connections for making up duplex and triplex combinations. Frame corner hitch for horses. Endwise transport attachment. Rear hitch for trailing a grain drill, land packer, or similar implement.

Ground equipment: Extra shanks for 10-ft. sections (to make 4-tooth instead of 3), and for 12-ft. sections (to make 5-tooth instead of 4). Removable cast slip nose for square rod points. Nonadjustable points for round weeder rods.

Specifications

Size	Description	Net Weight (Approx.)*
9-ft.	single	825 lb.
10-ft.	single	844 lb.
12-ft.	single	946 lb.
18-ft.	duplex	1745 lb.
20-ft.	duplex	1793 lb.
24-ft.	duplex	1999 lb.
30-ft.	triplex	2610 lb.
36-ft.	triplex	2923 lb.

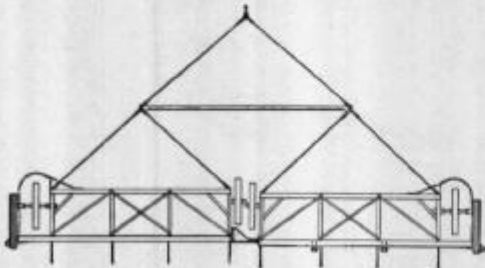
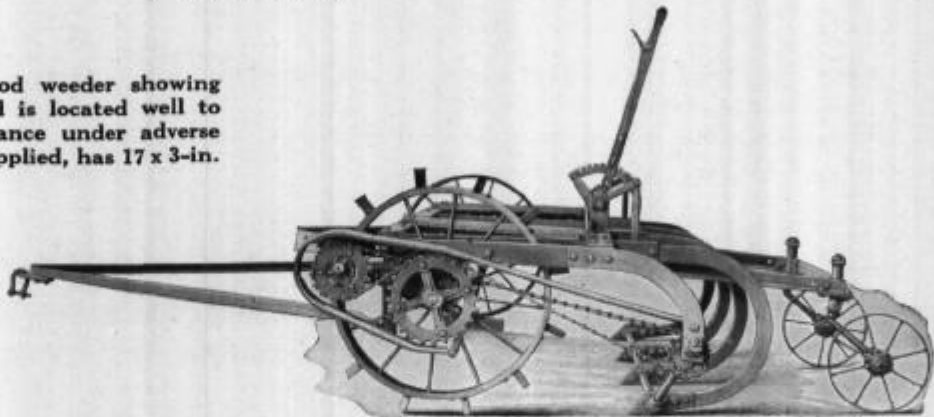
*With plain tractor hitch and transport on single-section; cable hitch and transport on duplex and triplex.



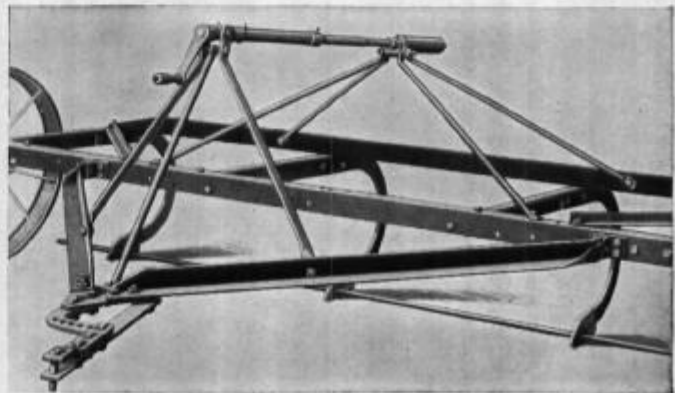
No. 5 Rod Weeders

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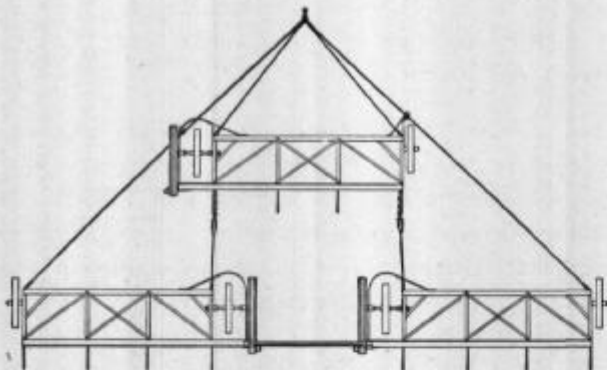
Illust. 1 (right)—Side view of 12-ft. rod weeder showing simple, positive drive. The weeder rod is located well to the rear to provide ample trash clearance under adverse conditions. The transport, regularly supplied, has 17 x 3-in. steel spoke wheels.



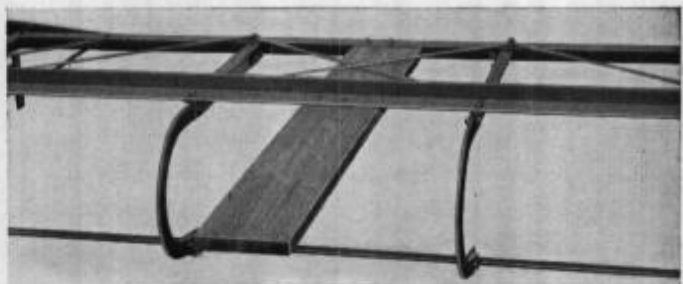
Illust. 2 — Plan view of duplex machine with cable hitch (regular equipment).



Illust. 6 — Detail showing screw depth regulator and cushion spring (special).



Illust. 3 — Plan view of triplex machine with cable hitch (regular equipment).



Illust. 7 — Platform plank which can be supplied for the single-section machine.



Illust. 4 — Adjustable point for square weeder rod.



Illust. 5 — Removable cast slip nose for square rod points, recommended for work in vinelike weeds, prevents wear on steel points and is easily replaceable.

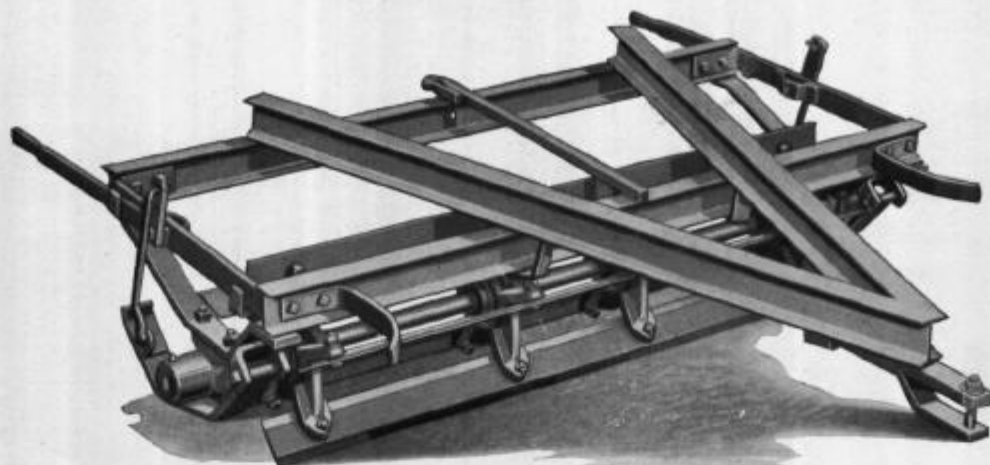


Illust. 8 — Adjustable point for round weeder rod.

Illust. 9 — Nonadjustable point for round weeder rods.



Nos. 4-A and 5-A Tractor Stalk Cutters



Illust. 1 — The No. 5-A tractor stalk cutter which has 5 blades, shown in operating position. Cutting width is 70 inches.

- Handy levers raise machine on runners for transport — no need to unhitch from tractor.
- Balanced V-hitch — entire weight of machine bears down on cutter blades.
- Ample clearance for effective cutting of stalks.
- Reversible blades.
- Replaceable bearings and spiders.

Nos. 4-A and 5-A stalk cutters are specially designed for fast, easy work on one of the most rugged jobs on the farm. The V-type hitch welded to the top of the massive frame is accurately balanced so that the entire weight of the machine bears down on the cutter blades, and vibration at the tractor drawbar is reduced to a minimum. Narrowing of the hitch at the front of the machine keeps stalks upright for effective action by the blades and provides ample clearance for the tractor wheels when making turns.

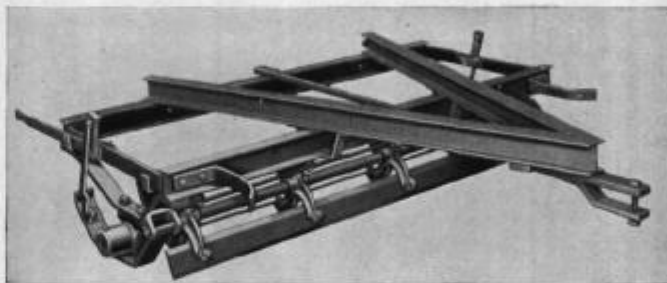
There are four blades, 70 inches long, on the No. 4-A stalk cutter, five on the No. 5-A. These blades are reversible and carried on four sturdy gray-iron, replaceable spiders; somewhat closer spacing of the two inside spiders allows ample clearance for the stalks in various row widths.

Attachments

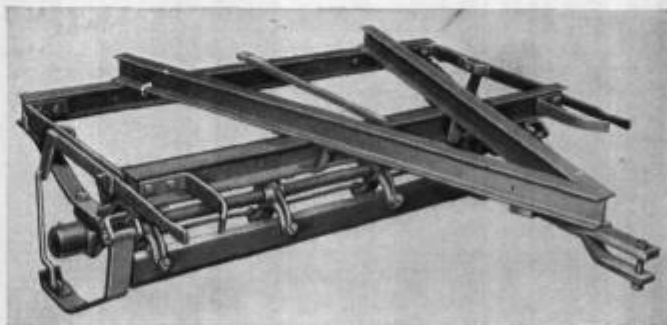
Universal clevis. Stalk straightener. Weight brackets. Cutter head weights (set of 3). Soil pulverizer gangs. Wheel-type squadron hitch and bumpers for use on machines hitched in squadron.

Specifications

Machine No.	Cutting Width	No. Blades	Net Weight (Approx.)
4-A	70-in.	4	821 lb.
5-A	70-in.	5	861 lb.



Illust. 2 — The No. 4-A has 4 blades. The frame is the same as that of the No. 5-A.



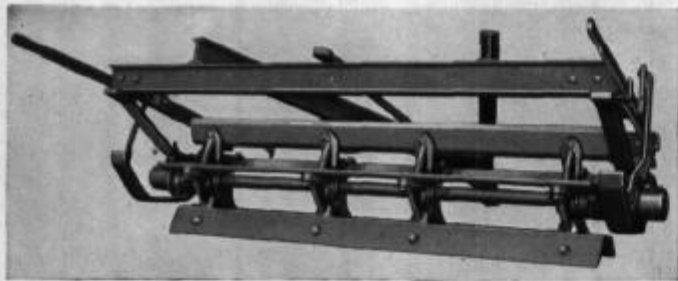
Illust. 3 — No. 4-A stalk cutter with runners raised for transporting the machine from one field to another.

Illust. 4 — A handy lever on each side raises the stalk cutter for transport,

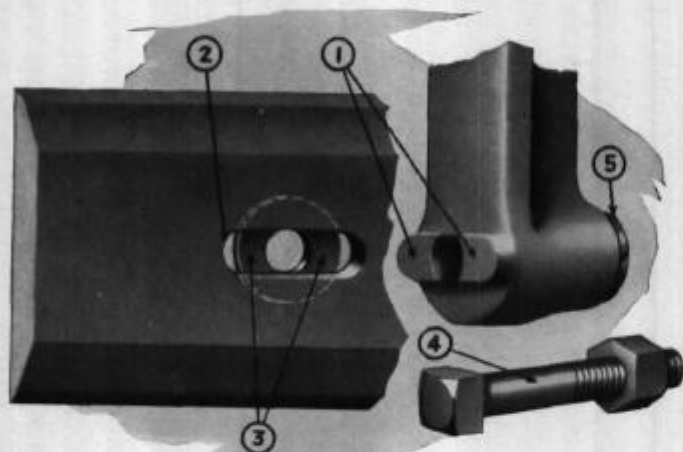


Nos. 4-A and 5-A Tractor Stalk Cutters

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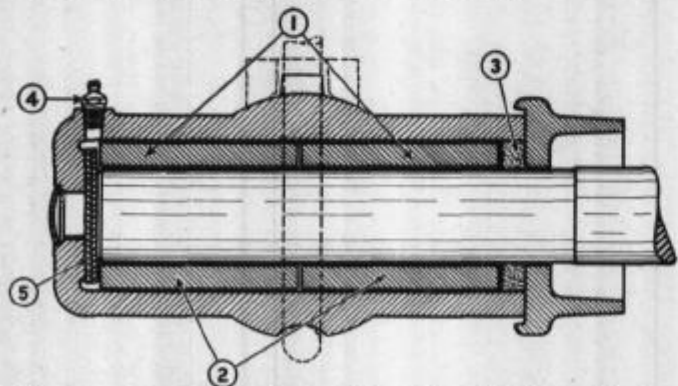


Illust. 1—The stalk cutters have reversible blades to double their life of usefulness. The gray iron spiders, which are replaceable, are spaced to provide ample clearance for stalks in various row widths.



Illust. 2—Blades are securely attached by means of 2-in. lugs on the spiders which fit into slots on the blades. Shown above are (1) the lug on the spider, (2) the slot in the blade, (3) a washer on the other side of the blade, (4) the bolt which extends through the lug and blade, and (5) a lock washer.

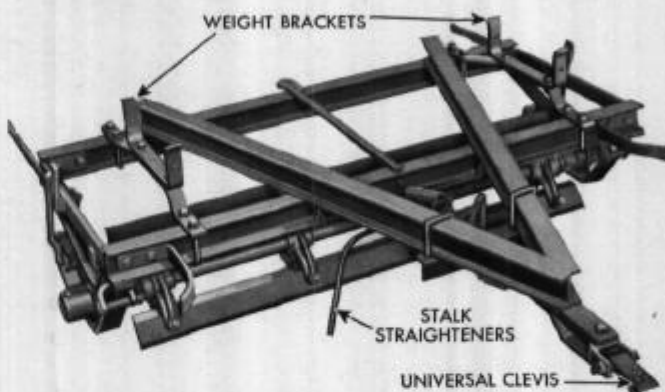
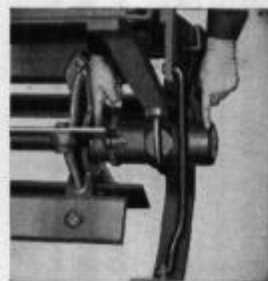
All shock from the blade is taken by the lug rather than the bolt. This construction prevents shearing bolts and eliminates breakage of blades and other parts. It holds the blades at the proper angle for effective cutting.



Illust. 3—Bearings are designed for a long life of trouble-free service. Each blade shaft has two 4-in. upper bearings (1) and two 4-in. lower bearings (2). The bearings are of chilled iron and are reversible and replaceable. The felt washer (3) keeps out dust and dirt. A pressure lubrication fitting is shown at (4). Case-hardened wearing disks (5) take the stress of end thrust.

Should the top bearings, which get most of the weight, become worn after long service, it is a simple matter to put the top bearings on the bottom and the bottom bearings on top.

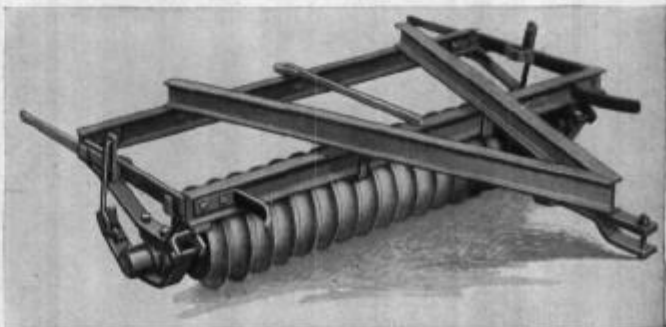
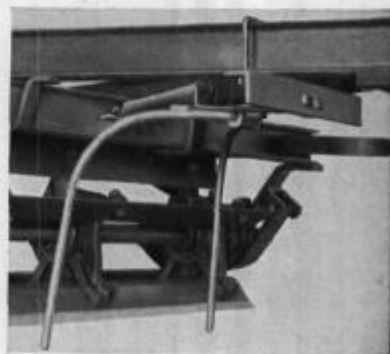
Illust. 4—Each bearing box rests on a massive gray iron pillow block. Notice that the bearing extends all the way to the spider. There is no rotating shaft on which stalks can wrap.



Illust. 5—Equipment available for the Nos. 4-A and 5-A stalk cutters includes weight brackets for carrying a log or weight box when working in extra-tough stalks; a universal clevis; and a stalk straightener (also shown below).

Illust. 6—The stalk straightener attachment catches the stalks and arranges them in line with the direction of travel so that they will be at right angles to the blades.

Spring pressure keeps the tines in contact with the ground.



Illust. 7—A No. 4-A or 5-A stalk cutter can be quickly and easily converted into a soil pulverizer by taking out the stalk cutter head as a unit, and putting in its place soil pulverizer wheels, as shown above. The 17 pulverizer wheels have a rolling width of 65 inches. They are 15 inches in diameter.

MIDDLEBUSTERS, LISTERS AND PLANTERS BEDDERS AND CANE TOOLS

Section 4

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A-14 and B-14 One-Row Middlebusters

(For Farmalls A and B)



Illust. 1 — The A-14 one-row middlebuster. Note the adjustment lever which permits shifting the beam and bottom to right or left for any desired row spacing.

Sturdy Middlebusters

The A-14 and B-14 middlebusters for Farmalls A and B are sturdy, rear-mounted busters adapted to throw up or reverse beds or open furrows to prepare ground for cotton and other crops planted on beds or in furrows. The 14-in. bottom is attached to a heavy vertical beam connected with the tractor by two heavy double parallel links. The use of these links keeps the bottom at the proper working angle regardless of depth or unevenness of the field, while none of the tractor weight rests on the bottoms.

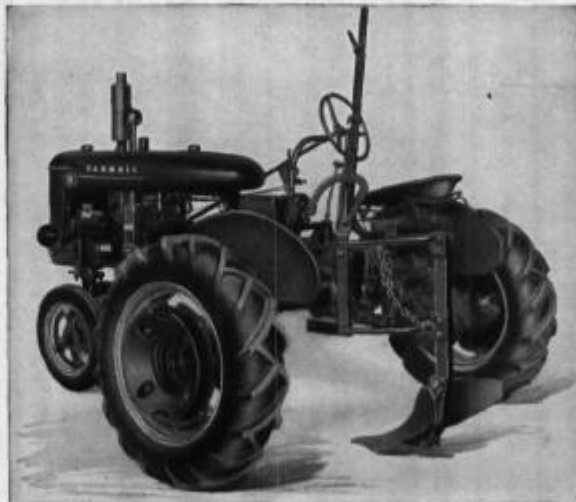
These busters can be supplied as hand or power-lift busters. Power-lift busters are equipped with attaching parts for using the pneumatic Lift-All.

Accurate Adjustment

A shifting lever sets the row spacing on the A-14 middlebuster. Proper row spacing adjustment is made on the B-14 by setting the rear wheels of the tractor the same distance from the center of the tractor as the desired width of the row. The busters are adjustable for 38, 40, 42-in. rows.



Illust. 2 — Drill attachment which can be supplied for one and two-row middlebusters.



Illust. 3 — The Farmall-B with B-14 middlebuster. Wheel treads may be set in or out by changing rim location on wheel and by reversing wheels to permit different row spacings.

Regular Equipment

Hand lift or power lift, as ordered. No. 33-B or No. 34-B 14-in. bottoms on A-14 and B-14; 34-C 14-in. bottoms on A-14. Shield.

Special Equipment

16-in. plain or notched (blade) rolling colter. Flat or V-type gauge wheel. Combination gauge wheel and rolling colter for B-14. Spring trip attachment. No. 9 sweep attachment. No. 19 drill attachment (cotton and corn). No. 20 drill attachment (corn). Subsoilers for drill attachments. Disk covers.

Specifications

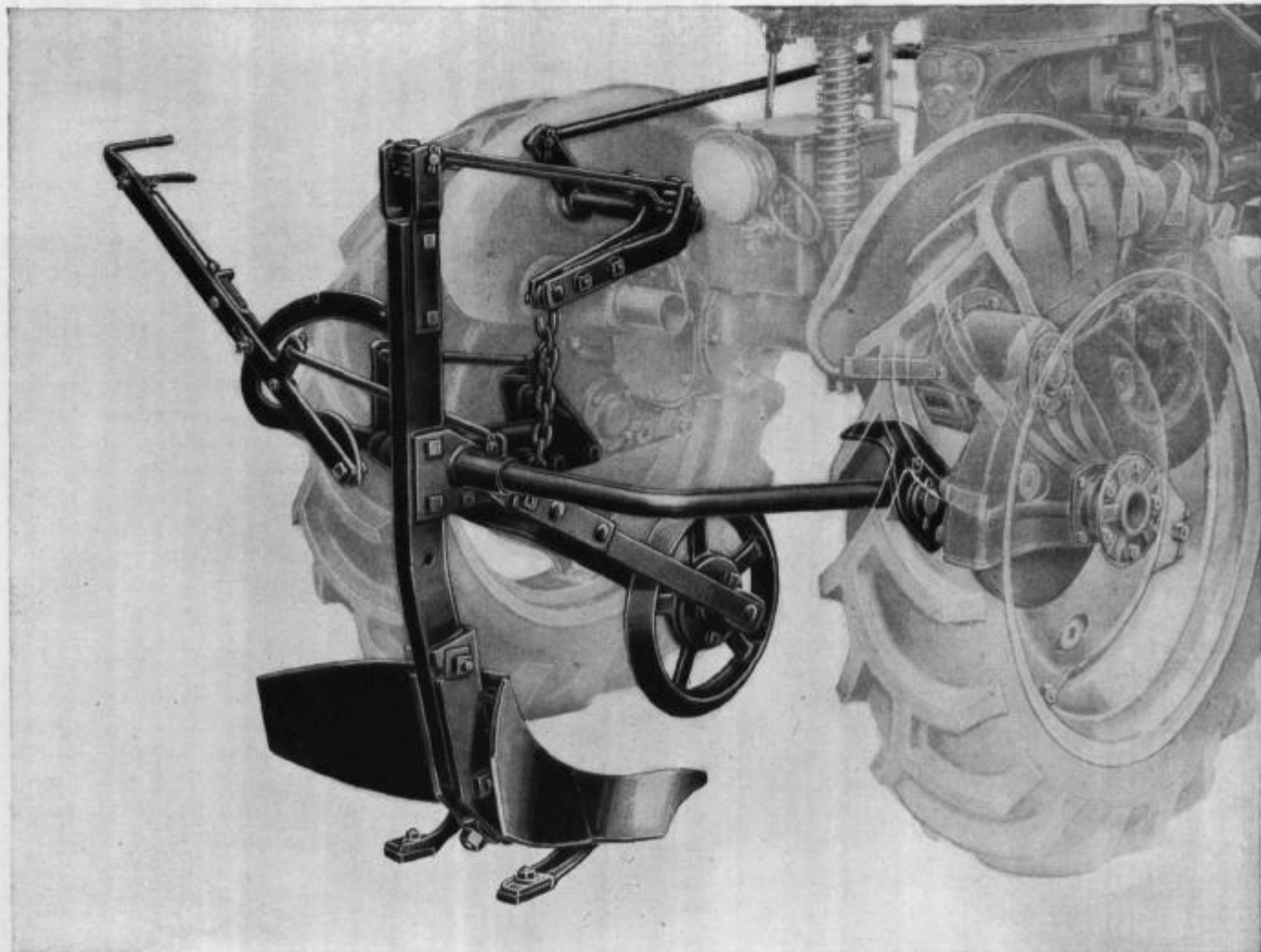
No.	Description	Net Weight (Approx.)
A-14	One-row, hand-lift middlebuster for Farmall-A	180 lb.
A-14	One-row, power-lift middlebuster for Farmall-A	224 lb.
B-14	One-row, hand-lift middlebuster for Farmall-B	164 lb.
B-14	One-row, power-lift middlebuster for Farmall-B	198 lb.
19	Cotton drill attachment for A-14 or B-14 middlebuster	97 lb.
20	Corn drill attachment for A-14 or B-14 middlebuster	80 lb.



Illust. 4 — The colter and gauge wheel attachment for the B-14 middlebuster.



Farmall Cub
Cub-16 Middlebuster
One-Row, Rear-Mounted



Illust. 1—The Cub-16 direct-connected middlebuster mounted on the rear of the Farmall Cub tractor. Row spacings are 36 inches and up.

- Quick-change — saves working time.
- Simple and easy to operate.
- Straight, vertical beam with ample clearance for trash.
- Parallel-action linkage keeps bottom at correct pitch regardless of operating depth.
- Gauge wheel assures uniform operating depth.
- Farmall Touch-Control for effortless raising and lowering — manual control, if desired.

Regular Equipment

Shifting lever mechanism. Oval-tire gauge wheel. High-speed middlebuster bottom, No. 34-B, 10-inch (soft-center moldboard and solid share).

Special Equipment

Bottom, No. 34-C, 10-inch (solid moldboard and solid share) high-speed middlebuster bottom in place of regular.

Gauge wheel (V-tire) when ordered in lieu of regular gauge wheel.

Rolling colter, 14-inch (plain blade for slightly trash-covered ground).

14-inch rolling colter (notched blade for trash-covered ground). Note: Either colter will be furnished in place of the regular gauge wheel when so ordered.



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Farmall Cub

Cub-16 Middlebuster

(Continued)



Specifications

Middlebuster No.	UNIVERSAL UNITS REQUIRED		No. of Rows	Row Spacing (Inches)	Net Weight (Approx.)
	Touch-Control	Manual Control			
Cub-16	No. 512 652 R92 Rear Rockshaft	No. 511 893 R92 Master Control Raising Lever and Rear Rockshaft	One	36 in. and up	184 lbs.

A Simple, Efficient Middlebuster

The Cub-16 one-row middlebuster consists of a strong beam, heavy stabilizing bail, upper parallel link, shifting lever mechanism, gauge wheel, and a 10-inch steel frog bottom. It is a rear-mounted implement designed for working as an integral unit with the Farmall Cub tractor equipped with either hydraulic Touch-Control or manual control.

Sturdily Constructed

This sturdily constructed middlebuster, mounted on a Farmall Cub, makes an ideal combination to throw up or reverse beds, or to open furrows in the preparation of ground for cotton and other crops planted on beds or in furrows.

The 10-inch bottom is attached to a heavy vertical beam. The beam is in turn linked to the tractor through a stabilizing bail which attaches to the tractor mounting pads on the tractor rear-axle housing. The beam is straight and works in a vertical position. Parallel-action linkage is provided, which permits the beam to remain

in the vertical position regardless of the operating depth. Operating depth is accurately maintained by a gauge wheel located over the point of the bottom. The middlebuster may be raised and lowered either by Touch-Control or by manual control. A rolling colter may be employed in place of the gauge wheel to cut trash.

The shifting lever is located slightly behind and to the left of the operator. This lever permits shifting the bottom to the right or the left of center in relation to the tractor. This feature makes it possible to operate one rear wheel either in the previously made furrow or on the edge of the nearly turned up soil.

Adjustable Front Axles Recommended

The Cub-16 middlebuster can be used with tractors equipped with fixed front axles; however, due to the various row widths and in view of the fact that various other implements are not adaptable to tractors with fixed axles, it is recommended that the Farmall Cub tractor be equipped with the adjustable type.



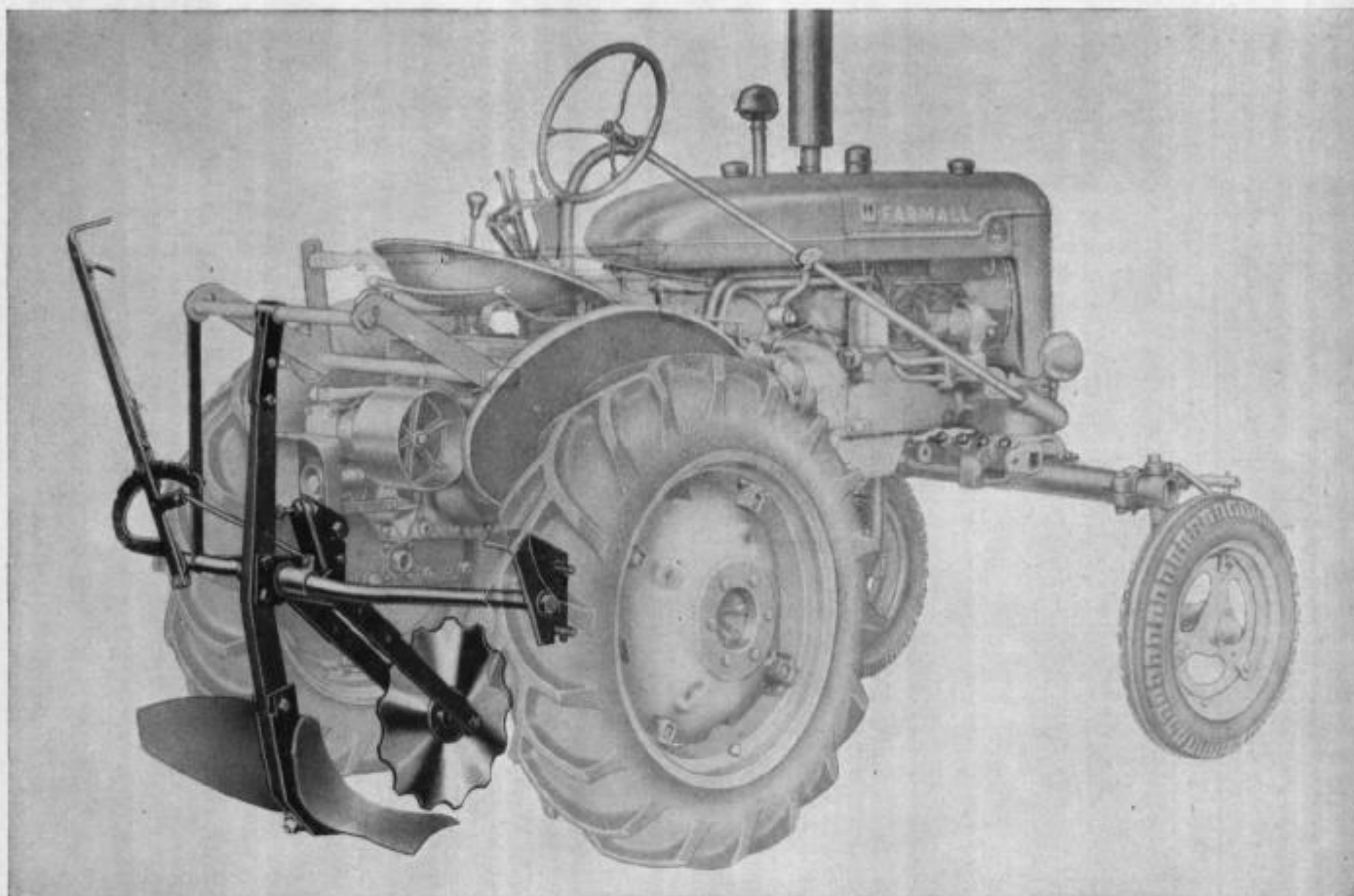
Illust. 2 — The Cub-16 middlebuster with plain rolling colter, available as special equipment, which is especially suited to splitting the soil for busting in trash-covered ground.



Farmall Super-A

A-16 Middlebuster

One-Row, Rear-Mounted



Illust. 1—The A-16 is a direct-connected middlebuster which rear-mounts on the Farmall Super-A tractor to form a highly efficient, easy-to-operate middlebusting unit. Row spacings are from 34 to 44 inches.

- Quick - change — minimum of time out between jobs.
- Simple and easy to operate
- Parallel - action linkage holds beam vertical regardless of operating depth.
- Shifting lever is convenient to operator's hand.
- Farmall Touch-Control for effortless raising and lowering.
- Farmall Touch-Control for accurate, instantaneous operating adjustments.

Regular Equipment

One 33-B-14-inch middlebuster bottom.

Special Equipment

34-B-14-in. middlebuster bottom. 34-C-14-in. middlebuster bottom. PORC-272 rolling colter, 16-in. (plain blade). PORC-273 rolling colter, 16-in. (notched blade). POGW-141 Gauge wheel (V-tire). POGW-142 gauge wheel (flat tire). POSS-14 subsoiler, complete. POSS-22 subsoiler, complete. POSS-25 subsoiler, complete No. 20 spring trip attachment. 512699 R1 rear light bracket for tractors equipped with lights. No. 21 drill attachment (cotton and corn). No. 22 drill attachment (corn only). Seed plates and seed plate bundles for Nos. 21 and 22 drill attachments as follows:

No. 138 seed plate bundle, regular No. 21 drill attachment.

No. 139 seed plate bundle, regular for No. 22 drill attachment.

No. 156 seed plate bundle (when ordered). PO-455-A seed plate for Reed's Yellow Dent corn (when ordered). PO-1412 seed plate, 30 cell, for cotton (when ordered for No. 21 drill attachment).

Specifications

Middlebuster No.	Universal Units Required	No. Rows	Row Spacing (Inches)	Net Weight (Approx.)
A-16	Universal Rockshaft	One	34 to 44	180 lb.



Farmall Super-A
A-16 Middlebuster
One-Row, Rear-Mounted (Continued)

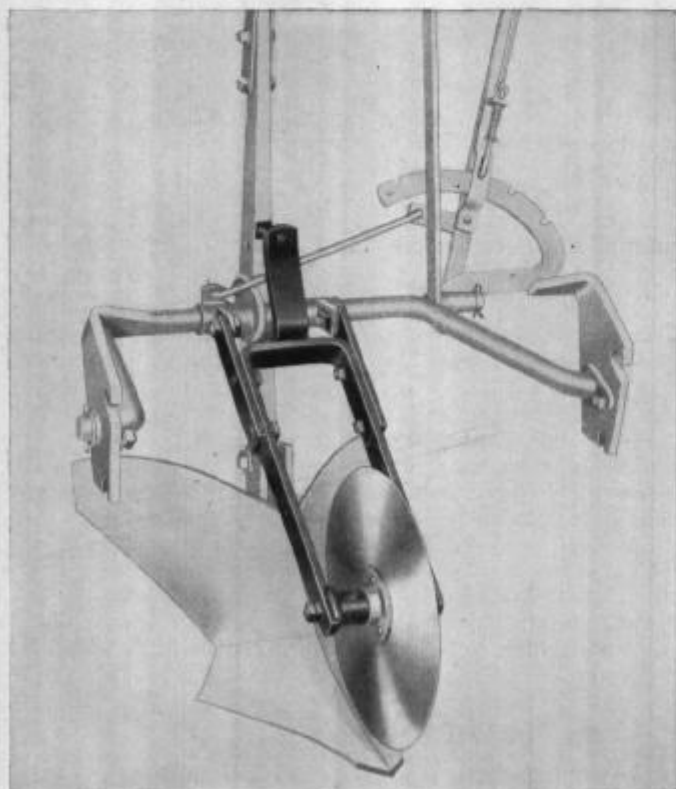


A Simple, Efficient Middlebuster

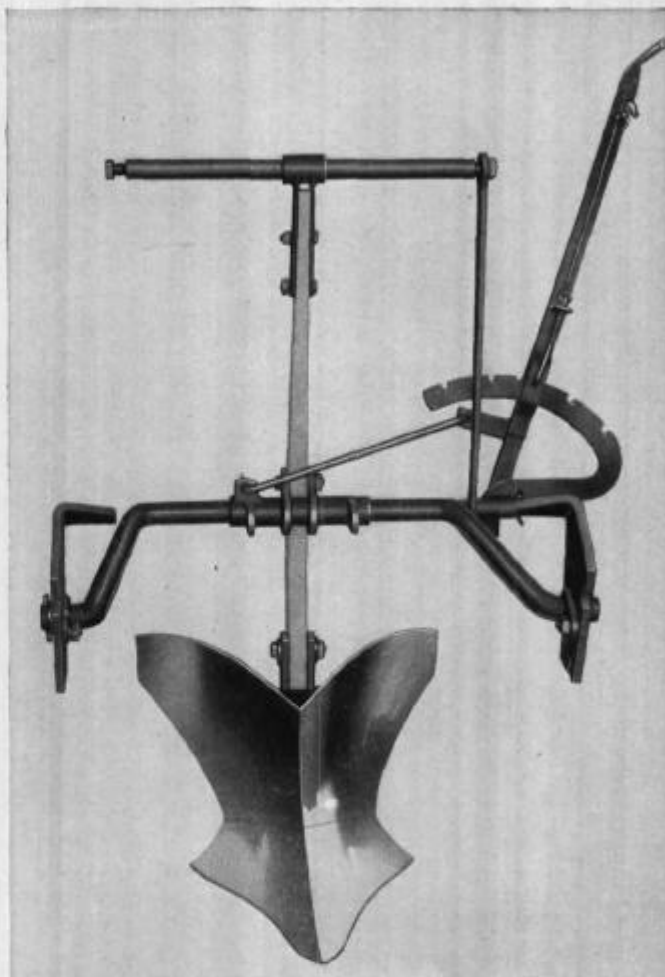
The A-16 one-row middlebuster consists of a beam, stabilizing bail, shifting lever mechanism, and a 14-inch steel frog bottom. It is a rear-mounted implement which is designed to work as an integral unit with the Farmall Super-A tractor. This machine requires one 512 281 R91 Universal (rigid) Rockshaft. It may also be used with the Universal (split) Rockshaft 512 454 R91 which is required for the A-189 one-furrow, two-way plow.

Sturdily Constructed

This sturdily constructed middlebuster, mounted on the Farmall Super-A tractor, makes an ideal combination to throw up or reverse beds, or to open furrows in the preparation of ground for cotton and other crops planted on beds or in furrows. The 14-inch bottom is attached to a heavy beam. The beam in turn is linked to the tractor through a stabilizing bail which attaches to the Tractor Mounting Pads on the tractor rear axle housing. The beam is straight and works in a vertical position. Parallel-action linkage is provided which holds the beam in the vertical position regardless of the operating depth.



Illust. 2 — The A-16 middlebuster with plain rolling colter, available as special equipment, which is especially suited to splitting the soil for busting in slightly trashy ground.



Illust. 1 — The A-16 middlebuster unit, removed from the tractor, is shown here with the 33-B 14-inch middlebuster bottom. Two other bottoms are available as special equipment.

Finger-Tip Farmall Touch-Control

The buster is raised, lowered and adjusted from the tractor seat with Farmall Touch-Control. Just a "finger-tip touch" sets the middlebuster in the ground or raises it. Small depth adjustments are made instantly and accurately while moving down the field.

34 to 44-inch Row Spacings

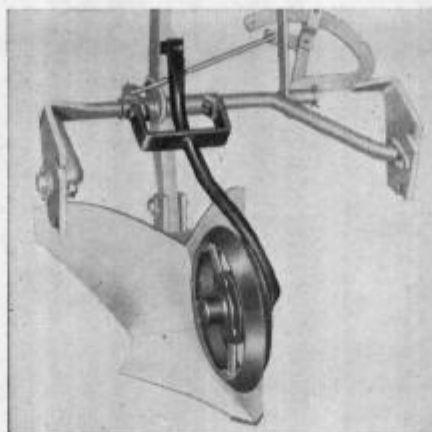
A shifting lever sets the row spacing on the A-16 middlebuster. Proper adjustment is made by setting each rear wheel of the tractor one half the distance from the center of the tractor as the desired width of the row. The buster is adjustable for rows from 34 to 44 inches.



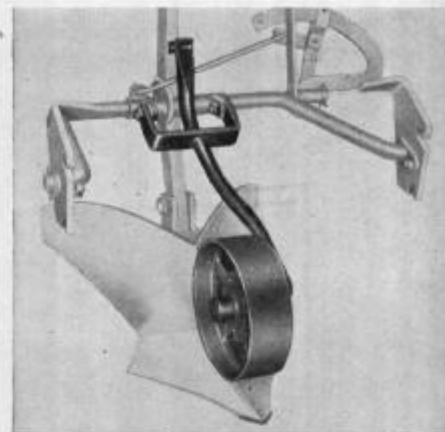
Farmall Super-A
A-16 Middlebuster
 One-Row, Rear-Mounted (Continued)



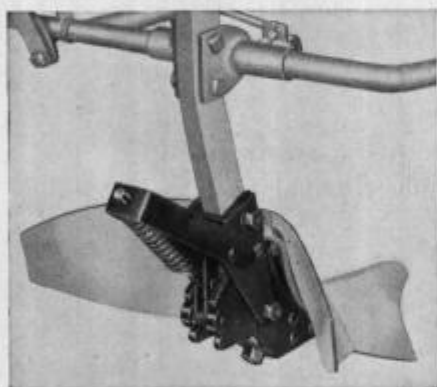
Illust. 1—A-16 middlebuster with notched colter attachment. This colter is especially suited to working in trashy ground or where the soil is extremely muddy.



Illust. 2—The A-16 middlebuster with "V-type" gauge wheel attachment, specially suited to working in hard ground.



Illust. 3—The A-16 middlebuster with "flat tire" gauge wheel which is well suited to working where the soil is soft. Note that there is a depth setting on the colters and the gauge wheels. Adjustment is only a matter of a minute.



Illust. 4—The A-16 middlebuster with spring trip attachment, gives added protection to the middlebuster point when working in stony and root-infested soil.

Illust. 5—A-16 middlebuster with No. 21 drill attachment for drilling cotton and corn during the initial busting or rebusting operation. The seed plate bundle as illustrated is furnished as regular equipment. The "V-type" gauge wheel, although not a part of the No. 21 drill attachment, is shown here because either this gauge wheel or the "flat tire" gauge wheel is recommended for use with this unit. A subsoiler attachment is also recommended, especially if the drill attachment is used on the initial busting operation. The subsoiler is set to cut a small furrow just below the buster bottom. The results are accurate placement of seed into a moist furrow so that it will get off to a fast start.



INTERNATIONAL HARVESTER

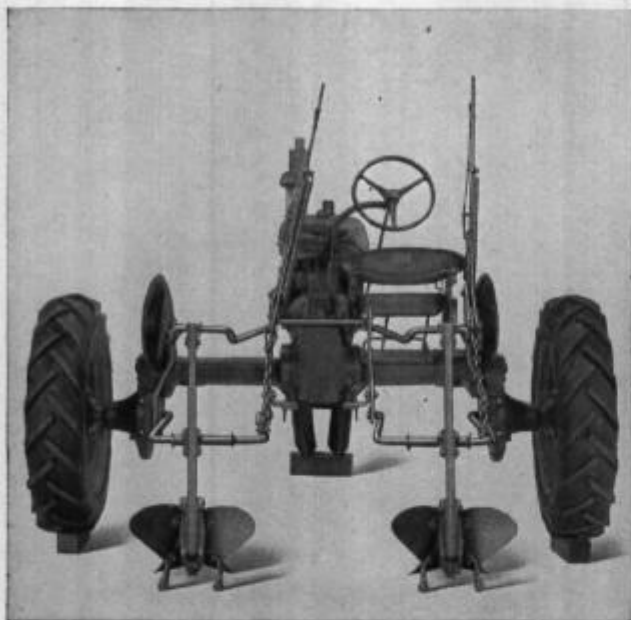
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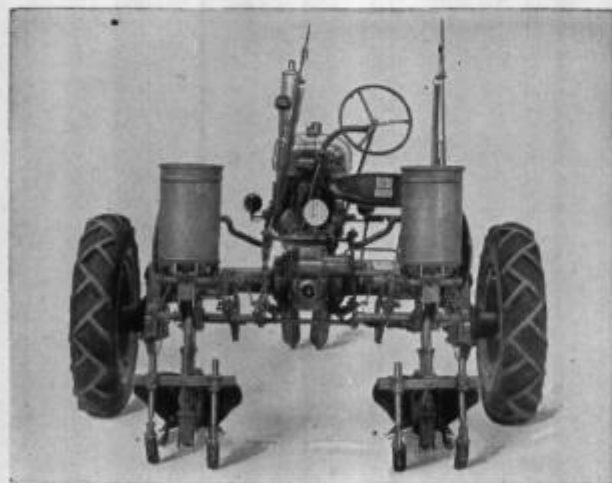


B-15 Two Row Middlebuster

(For Farmall B)



Illust. 1 — The B-15 two-row middlebuster. It can be supplied with hand lift (shown here) or equipped for use with pneumatic Lift-All.



Illust. 2 — The B-15 middlebuster with No. 98 lister planting attachment.



Illust. 3 — Ground tools for the No. 97 Blackland planting attachment.

Sturdy, Versatile Buster

The B-15 two-row middlebuster for the Farmall-B has ample capacity for average-sized operations. It is adjustable for rows 38, 40, and 42 inches apart. A parallel-link type of suspension controls the depth and levelness of the bottoms and keeps them in the desired position. If conditions make it desirable to convert the B-15 to a one-row buster, this may be done by removing the left-hand unit and moving the right-hand unit assembly to the center. The B-15 can be supplied either in hand lift or equipped for use with pneumatic Lift-All.

Lister drill attachments for this middlebuster are the No. 97 Blackland, the No. 98 lister planters, the No. 19 combination cotton corn lister, and the No. 20 corn lister planter.

See also pages on Lister and Middlebuster Bottoms.

Regular Equipment

Hand lift or power lift, as ordered. Bottoms or sweep attachment and 22-in. bedding sweeps as ordered.

Special Equipment

14-in. plain or notched rolling colters. Flat tire or V-type gauge wheels, left and right. Combination gauge wheel and rolling colter with either V-tire or flat-tire gauge wheel, and either plain or notched colters. Double disk markers. No. 17 spring trip attachment. No. 9 sweep attachment (less sweeps).

Planting equipment: No. 19 cotton or No. 20 corn drill attachment with combination cotton and flat drop corn hoppers. Subsoilers POSS-22 and POSS-25 for No. 19 and No. 20 drill attachments. No. 97 Blackland or No. 98 lister planting attachment with single seed hopper, shovel openers, and pin break shovel coverers.

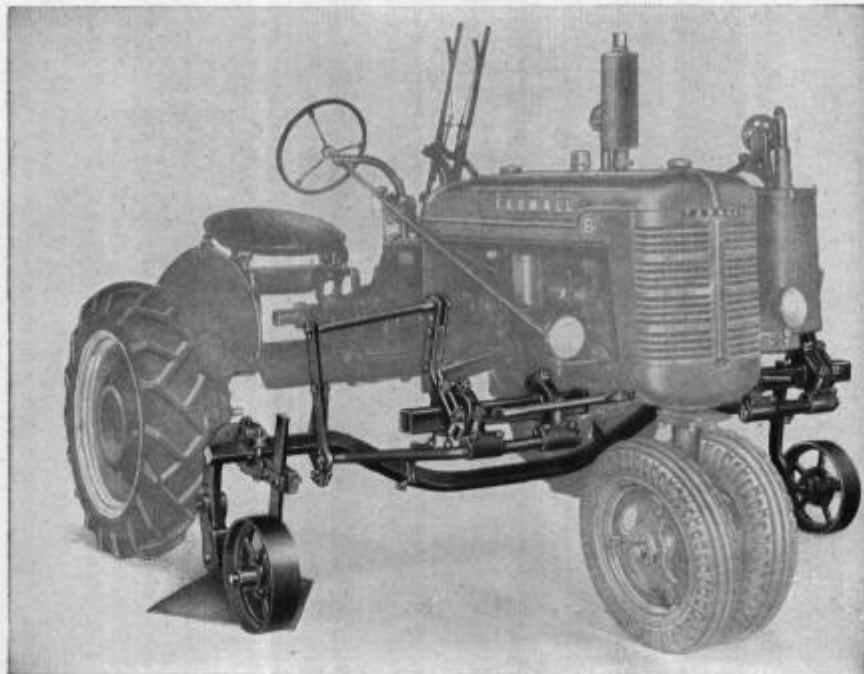
Specifications

No.	Description	Net Weight (Approx.)
B-15	Two-row, hand-lift middlebuster with 12-in. lister bottoms.....	341 lb.
B-15	Two-row, hand-lift middlebuster with sweep attachments and 22-in. bedding sweeps.....	304 lb.
B-15	Two-row, power-lift middlebuster with 12-in. lister bottoms.....	395 lb.
B-15	Two-row, power-lift middlebuster with sweep attachments and 22-in. bedding sweeps.....	360 lb.
19	Cotton drill attachment (two-row).....	196 lb.
20	Corn drill attachment (two-row).....	162 lb.
97	Blackland planting attachment (two-row)....	316 lb.
98	Lister type planting attachment (two-row)....	309 lb.



B-7 Push Type Middlebuster

(For Farmall B)



Illust. 1 — The B-7 push-type middlebuster for use with the Farmall-B. It is supplied only for use with pneumatic Lift-All.

The B-7 is a two-row forward-mounted middlebuster used with the Farmall-B tractor for skip-row, flat busting or rebusting in light soils. It is especially well adapted for cleaning out middles before planting time. Maximum traction is maintained by the rear tractor wheel running in the newly opened furrow.

Uniform Penetration Depth

Gauge wheels assure ample flexibility of the buster to provide good penetration whether the buster is operated with the front tractor wheels riding the ridge or running in the furrow.

The beams are clamped to the square tool bar with adjustments provided for 32 to 42-inch row spacings. The tool bar is a sturdy, flexibly mounted bar, which runs beneath the tractor and is readily fastened to the front frame of either a B-236 or B-238 cultivator.

Pneumatic Power-Lift

The B-7 buster is furnished for pneumatic power-lift only. The front frame as well as power-lift connections are the same as on the B-236 and B-238 Farmall cultivators. If desired, the B-7 busters can be ordered less these parts.

Regular Equipment

Power lift only. Gauge wheels. 10-in. middlebuster bottoms or two 22-in. sweeps on No. 9 sweep attachments, as ordered. With or without front frame, gang beam heads and U-bolts which are common to B-236 and B-238 cultivators—see Specifications.

See also pages on Middlebuster and Lister Bottoms.

Special Equipment

Gauge wheels with or without rubber overtire. V-type gauge wheel. Front frame, gang beam heads and U-bolts.

Specifications

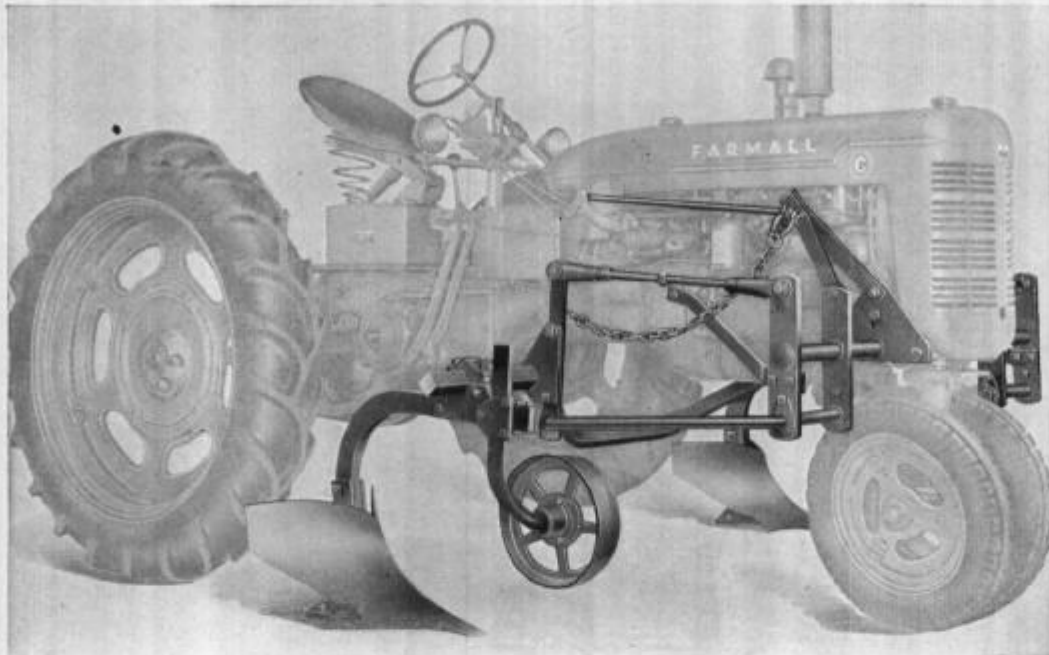
No.	Description	Net Weight (Approx.)
B-7	2-row push-type middlebuster with gauge wheels and 10-in. middlebuster bottoms.....	652 lb.
B-7	2-row push-type middlebuster with gauge wheels and two 22-in. sweeps on No. 9 sweep attachment.....	610 lb.
B-7	2-row push-type middlebuster with gauge wheels and two 10-in. middlebuster bottoms (less front frame and parts common to B-236 and B-238 cultivators).....	470 lb.
B-7	2-row push-type middlebuster with gauge wheels and two 22-in. sweeps on No. 9 sweep attachment (less front frame and parts common to B-236 and B-238 cultivators).....	430 lb.



Farmall C

C-18 Skip-Row Middlebuster

Two-Bottom, Forward-Mounted



Illust. 1 — The C-18-A middlebuster with regular equipment. The C-18-B is similar but equipped with sweeps.

- **Quick-Change** — Implement slip-on brackets quickly and easily secured to tractor mounting pads by bolts with tapered-face heads.
- **Forward Mounting** — Assures full visibility of work and permits running tractor rear wheels on solid footing in the furrow.
- **Touch-Control** — Lowers and raises beams.
- **Gauge Wheels** — Assure uniform depth.

The C-18 is a two-row, forward-mounted middlebuster designed for skip-row (two-row) flat busting or rebusting. When equipped with sweeps it is especially adapted for cleaning out middles before planting. The tractor rear wheels can be spaced to run in the newly-opened furrows, thus assuring maximum traction.

The C-18 middlebuster is available in two types — C-18-A equipped with middlebuster bottoms and C-18-B equipped with sweeps. The two machines are otherwise alike.

The middlebuster consists of a $1\frac{3}{4}$ -inch square tool bar connected by parallel-action linkage to frames which are attached to the forward mounting pads on each side of the tractor. The parallel linkage is connected by rods to the Touch-Control power arms on each side of the tractor. The parallel action of the linkage enables the middlebuster bottoms or sweeps to retain the correct pitch in relation to the soil regardless of their working depth. The middlebuster beams are adjustable on the tool bar for row spacings of 32 to 42 inches. Gauge wheels control the operating depth and assure a uniform bed.

Regular Equipment

Flat-tire gauge wheels, 13-in. dia. High-speed middlebuster bottoms, 10 or 12-in., with or without runners, as ordered (for C-18-A). No. 9 sweep attachment with 22-in. sweeps (for C-18-B).

Special Equipment

V-tire gauge wheels, 16-in. dia. No. 11 disk attachment. No. 9 sweep attachment with 22-in. sweeps (for C-18-A). Bedding sweeps—18, 20, 24, or 26-in. for No. 9 sweep attachment. Wings, 13 or 17-in. for bedding sweeps. Parts necessary to attach middlebuster bottoms to beams (for C-18-B). Middlebuster bottoms (for C-18-B).

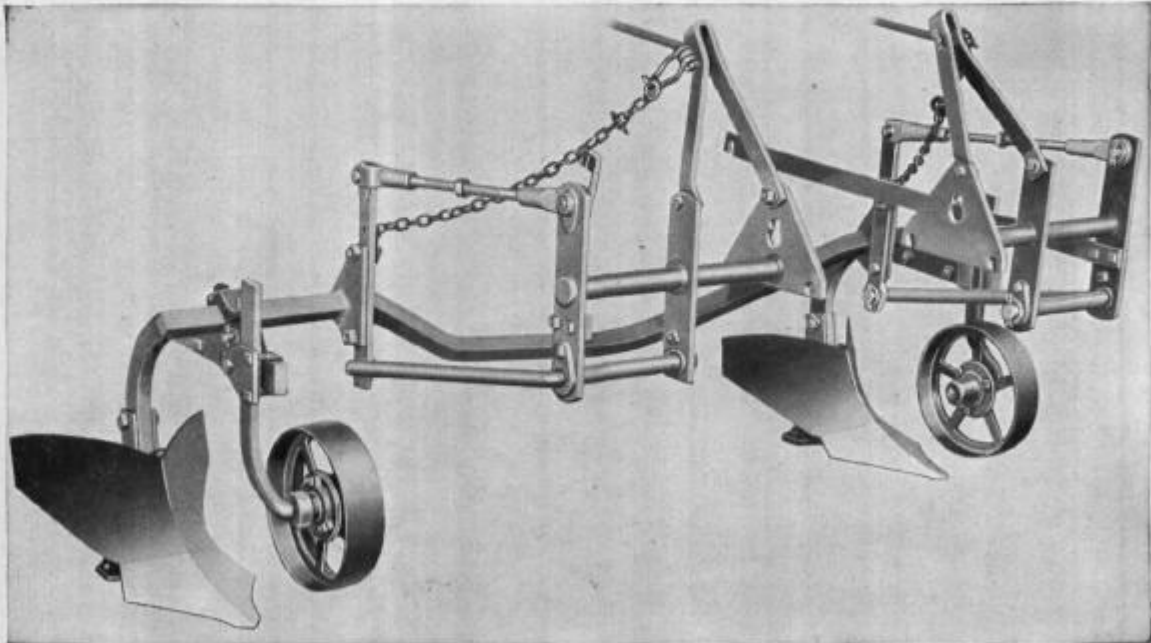
Specifications

Middlebuster No.	Row Spacing	Mounting	Net Weight (Approx.)
C-18-A	32 to 42-in.	Slip-on brackets bolted to mounting pads	561 lb.
C-18-B	32 to 42-in.		551 lb.

Illust. 2 — No. 9 sweep attachment with 22-inch sweeps. This equipment is regularly supplied with the C-18-B middlebuster and is available as special equipment for the C-18-A.



Farmall C
C-18 Skip-Row Middlebuster
(Continued)



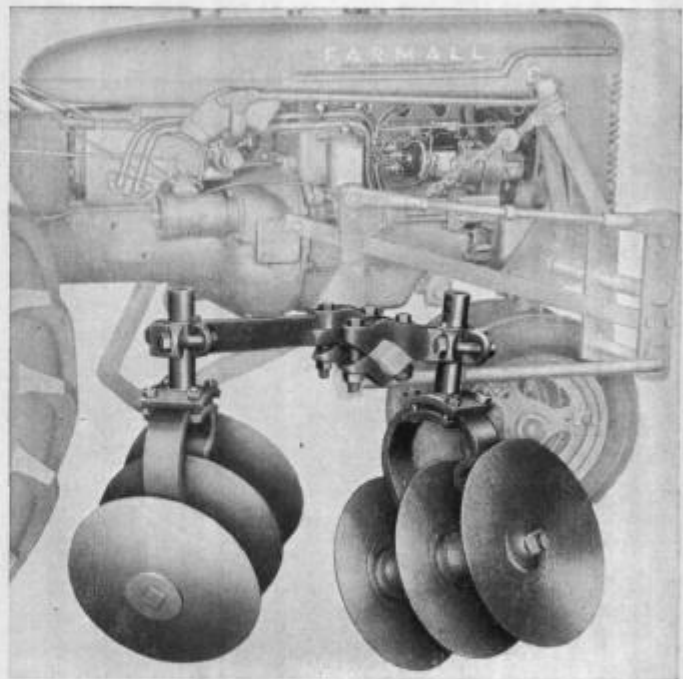
Illust. 1 — The C-18-A middlebuster unit. Note the simple but sturdy construction of this Touch-Control implement. The parallel linkage has replaceable bearings at the pivot points.

Quick-Change Features

The C-18 middlebuster is a quick-change unit designed for direct connection to the Farmall C tractor. It embodies its own mounting frame and control linkage. The frame is equipped with slip-on brackets which are quickly secured to the front mounting pads on each side of the tractor. The key-hole shaped openings in the slip-on brackets are tapered and the mounting cap screws have tapered-face heads so that when tightened down the brackets are automatically centered to hold the implement always in exactly the same position. The control linkage is quickly attached to the Touch-Control power arms by convenient locking pins.



Illust. 2 — V-tire gauge wheels are available as special equipment to replace the regular flat-tire gauge wheels.



Illust. 3 — The No. 11 disk attachment for C-18 middlebusters. The disks are clamped to the tool bar, replacing the regular bottom or sweep beams. The disks are adjustable for tilt and cutting angle.



Forward-Mounted Middlebusters

HM-19 Two-Row and M-19 Three-Row for Farmall H, M and MD Tractors



Illust. 1 — The HM-19 two-row middlebuster for use with Farmall H, M and MD tractors. The M-19 three-row middlebuster for Farmall M and MD tractors has a third row unit mounted at the rear of the tractor.

- For heavy-duty work.
- Forward-mounted for good vision.
- Accurate depth control.
- High-clearance for easy maneuvering.
- Rear wheels run in furrows and assure good traction.

The HM-19 is a heavy-duty, high-clearance, forward-mounted, two-row middlebuster for use on Farmall H, M and MD tractors equipped with Farmall hydraulic Lift-All. The M-19 is a three-row middlebuster for use with Farmall M and MD tractors equipped with Lift-All. It consists of the HM-19 forward-mounted two-row equipment and a one-row unit mounted at the rear of the tractor. The HM-19 and M-19 are adjustable for row spacings of 36, 38, 40 and 42 inches. A special long tool bar is available as special equipment for additional row spacings up to 48 inches.

Raised and Lowered Hydraulically

Both machines utilize Farmall Lift-All for raising and lowering the bottoms and require $1\frac{3}{4}$ -inch diameter hydraulic cylinders . . . the two-row HM-19 requires two cylinders and the three-row M-19 requires three cylinders. The cylinders are located close to the buster, thereby eliminating pipes and linkage. In addition, the M-19 requires one-delayed-lift valve which permits the rear bottom to remain in the ground until it reaches the end of the field. This valve also delays the lowering action of the rear bottom when starting into the field.

Heavy-duty, parallel-link suspension on all row units provides flexibility for working in uneven ground and holds the bottoms at the correct pitch, once they are set, regardless of the working depth. Replaceable bearings are provided at the pivot points. They can be easily and economically replaced if wear occurs. An adjustable gauge wheel on each row unit controls the operating depth of the bottoms and assures uniform work in rough terrain.

Specifications

No.	Description	Net Weight (Approx.) Lb.
HM-19	Two-row middlebuster.....	790
M-19	Three-row middlebuster.....	1074



INTERNATIONAL HARVESTER



Forward-Mounted Middlebusters

HM-19 Two-Row and M-19 Three-Row for Farmall H, M and MD Tractors
(Continued)

Good Traction

The tractor drive wheels travel in the furrows opened by the forward-mounted bottoms. This feature assures maximum traction and makes it possible to use these heavy-duty machines in muddy or slippery ground.

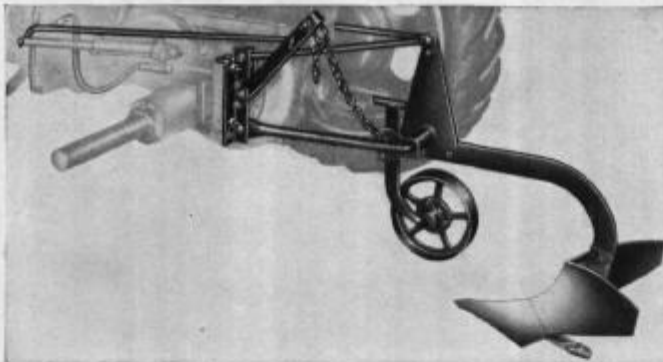
See pages 142 to 144 for illustrations and tables of available bottoms and attachments.

Regular Equipment

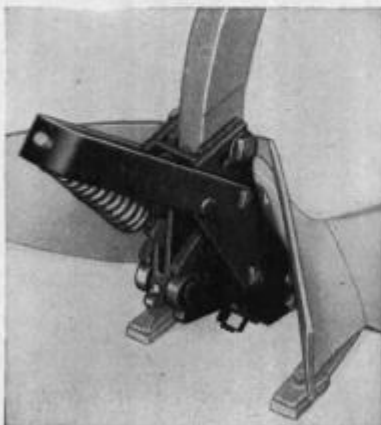
Gauge wheels. Bottoms as ordered.

Special Equipment

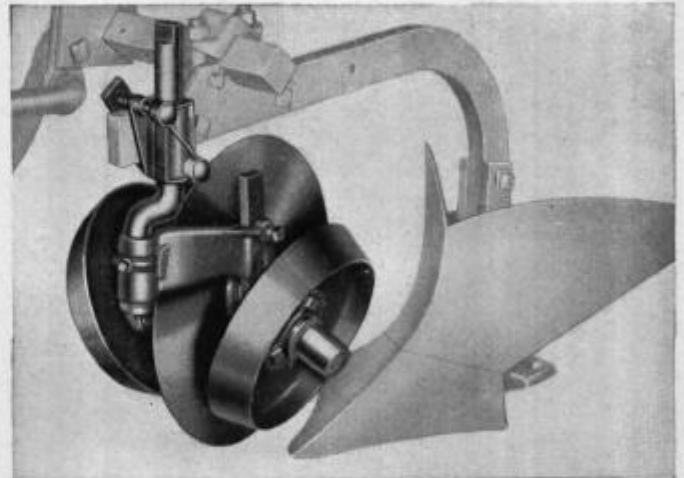
Long tool bar. V-tire gauge wheels. No. 20 spring trip attachment. No. 11 disk attachment for HM-19. No. 13 disk attachment for M-19. Marker attachment. Combination rolling colter and gauge wheel attachment with 16 or 18-inch plain or notched colter blade. Rear beam attachment to convert 2-row HM-19 to 3-row M-19.



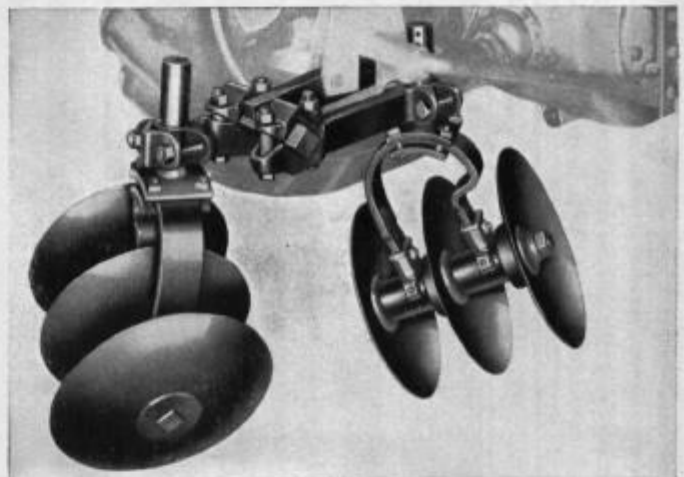
Illust. 1—The third-row unit of the M-19 middlebuster mounts on the rear of the Farmall M and MD tractors. This unit is available to convert HM-19 to M-19.



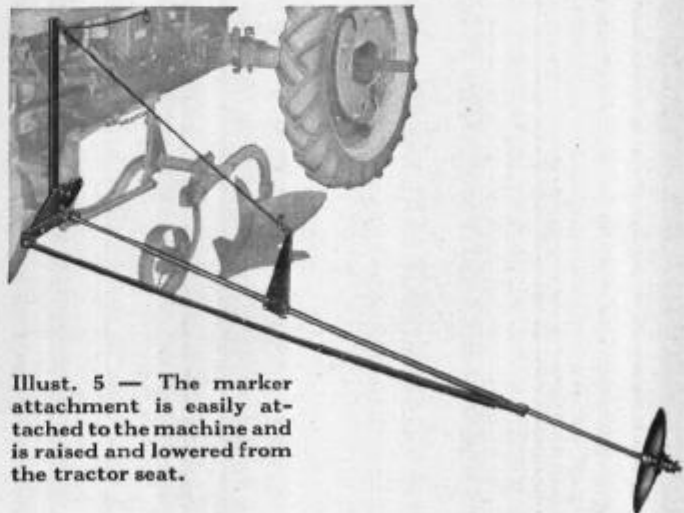
Illust. 2—No. 20 spring trip attachment.



Illust. 3—The combination rolling colter and gauge wheel attachment for the HM-19.



Illust. 4—No. 13 disk attachment for the M-19. The No. 11 disk attachment for the HM-19 is of the same type but mounts forward.



Illust. 5—The marker attachment is easily attached to the machine and is raised and lowered from the tractor seat.



H-10 and HM-10 Tool Bar Middlebusters, Planters, Listers

Middlebusters

The H-10 and HM-10 middlebusters are tool bar implements for Farmalls H, M and MD, designed to provide the basic equipment for a wide variety of planter and lister combinations. The heavy steel tool bars are attached to the tractor through a long hitch to assure steady running. Stabilizing devices hold the busters in line from side to side yet allow ample flexibility for vertical adjustment. Both are power-lift machines, requiring two $2\frac{1}{4}$ -in. Lift-All cylinders. They are designed for row spacings of 34, 36, 38, 40, and 42 inches.

The H-10 is a 2-row implement with a $1\frac{1}{4}$ -inch square tool bar 95 inches long. Under certain conditions, it may be fitted as a 3-row buster for rebusting or cleaning out furrows.

The HM-10 comes in both 2 and 4-row sizes and has a heavy, 2-inch square tool bar 133 inches long. Each size is readily convertible—purchase of two additional beams and bottoms converts the 2-row into a 4-row; when tough soil conditions prevail, the 4-row can readily be reduced to a 2 or 3-row.

Planters and Listers

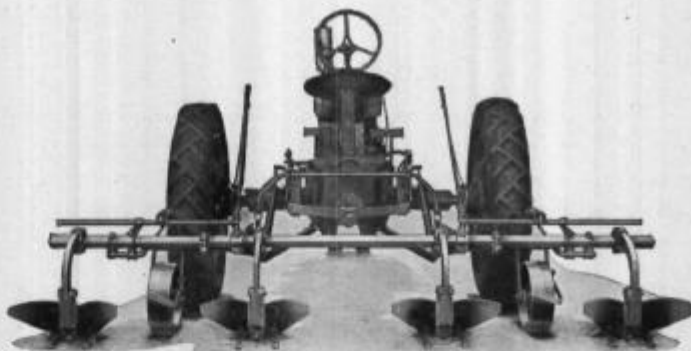
Built for use with the basic tool bar equipment of the 2-row H-10 and the 2 and 4-row HM-10 middlebusters are a wide variety of listers and planters. These can be supplied as complete machines including the middlebuster tool bars, gauge wheels, etc., or they can be ordered separately as attachments.

The seeding mechanism is driven by chain from a sprocket on the right tractor axle. A slip clutch on the seed plate drive shaft protects the mechanism against breakage should stones or other hard material get into the hoppers.

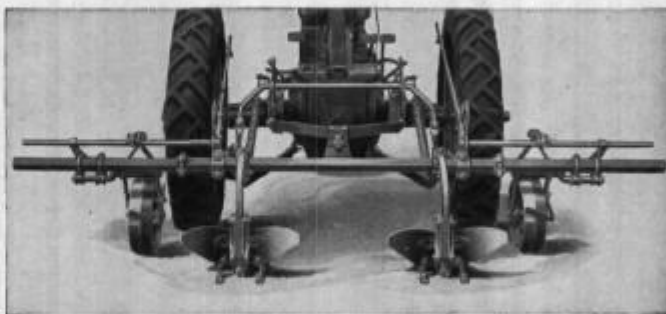
Hoppers are of two types. The cotton hoppers, for use in areas producing cotton and feed crops, include plates for planting 30 to 40 pounds of cotton seed per acre, corn cut-offs, and corn plates. The corn hoppers are the large flat-drop type. A special auxiliary bottom plate and plates for small seeds, such as kaffir, can also be supplied for both types of hopper.

Ground tools for the listers include 14-inch bottoms and pin-break shovel coverers. The Blackland planters are equipped with shovel openers and pin-break coverers. The loose-ground lister planters are equipped with 18-inch runner openers and open-center press wheels.

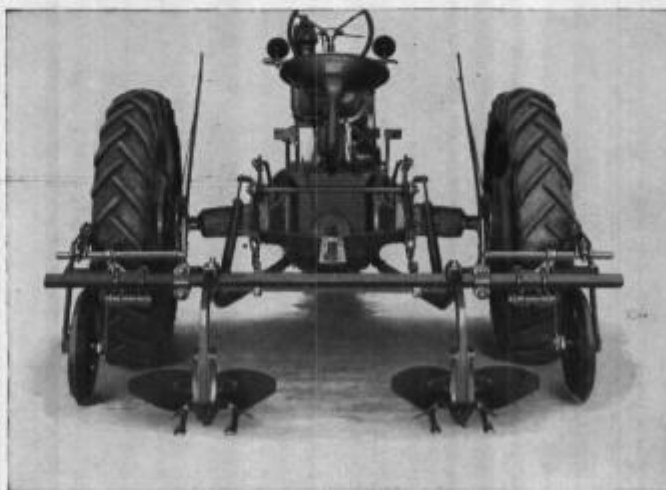
See also pages 142-144 on Attachments and Bottoms.



Illust. 1 — 4-row HM-10 middlebuster. Tool bar is 133 inches long and may be adjusted to bust rows from 34 to 42 inches apart.



Illust. 2 — HM-10 middlebuster set for busting two rows. This is a desirable feature under heavy going in stiff, hard-to-plow gumbo. The buster may be converted into a 3-row middlebuster if soil conditions warrant.



Illust. 3 — H-10 2-row middlebuster used for moderate to large sized farming operations. Tool bar is 95 inches long. A large variety of attachments are available. Tool bar is long enough for 3 bottoms for rebusting or cleaning out middles.

For Specifications see next two pages.

H-10 and HM-10 Tool Bar Middle Busters, Planters, Listers

(Continued)

Regular Equipment

Middlebusters: As shown in Specifications.

Special Equipment

Middlebuster equipment: No. 9 sweep attachment. Sweep attachment beam. Bedding sweeps. No. 11 disk attachment. CIU-28 bedding attachment. No. 4 sub-soil attachment. Cultivating attachment. 16-in. rolling colters in plain or notched. Pneumatic-tire gauge wheels.

H-10 Middlebuster only: No. 17 spring trip attachments.

HM-10 Middlebuster only: Extra beam attachments. Chisel tooth attachment. Spring-tooth attachment. POKA-16 knife attachment.

Planter and lister attachments: As listed in Specifications. Also: No. 82 planting attachment to convert 2-row No. 78 (2-row) to No. 79 (4-row) less beams and bottoms. No. 83 planting attachment to convert No. 80 (2-row) to No. 81 (4-row) less beams. No. 86 planting attachment to convert No. 84 (2-row) to No. 85 (4-row) less beams and sweeps.

Planters sweeps in 14, 16, 18, 20, 22 and 24-in. Bedding sweeps in 18, 20, 22, 24 and 26-in. Wings for bedding sweeps in 13½ and 17½ in.

Press wheel attachments. No. 8 loose-ground attachments (opener disk and runner press wheel and frame, and lower seed spout). No. 12 spring-trip shovel coverers. No. 15 disk coverers (with or without frame). No. 10 hill drop attachment.

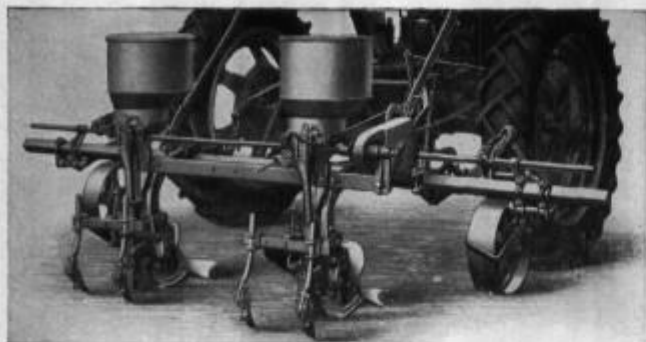
Specifications

No.	Description	Net Weight (Approx.) — Lb.	
		H-10	HM-10
	MIDDLEBUSTERS		
H-10	2-row with 14-in. bottoms and V-tire gauge wheels.....	825	
H-10	2-row with V-tire gauge wheels less stub beams and bottoms.....	749	
HM-10	2-row with 14-in. bottoms and flat tire gauge wheels.....		949
HM-10	4-row with 14-in. bottoms and flat tire gauge wheels.....		1114
HM-10	4-row with flat tire gauge wheels less stub beams and bottoms.....		962
	COTTON LISTER PLANTERS (includes flat-drop corn plates)		
H-10-78 & HM-10-78	2-row with 14-in. bottoms and No. 11 pin break shovel coverers.....	1087	1212
HM-10-79	4-row with 14-in. bottoms and No. 11 pin break shovel coverers.....		1561
	COTTON (LOOSE-GROUND) PLANTERS (includes flat-drop corn plates)		
H-10-80 & HM-10-80	2-row with 18-in. opener disks, runner openers and open center press wheels.....	1125	1249
HM-10-81	4-row with 18-in. opener disks, runner openers and open center press wheels.....		1635
	BLACKLAND COTTON PLANTERS (includes flat-drop corn plates)		
H-10-84 & HM-10-84	2-row with shovel openers and No. 11 pin break shovel coverers, less planter sweeps.....	1055	1089
HM-10-85	4-row with shovel openers and No. 11 pin break shovel coverers, less planter sweeps.....		1324
	CORN LISTER PLANTERS		
H-10-87 & HM-10-87	2-row with 14-in. bottoms and No. 11 pin break shovel coverers.....	1104	1228
HM-10-88	4-row with 14-in. bottoms and No. 11 pin break shovel coverers.....		1593
	CORN (LOOSE-GROUND) LISTER PLANTERS		
H-10-89 & HM-10-89	2-row with 18-in. opener disks, runner opener and open center press wheels.....	1141	1266
HM-10-90	4-row with 18-in. opener disks, runner opener and open center press wheels.....		1668

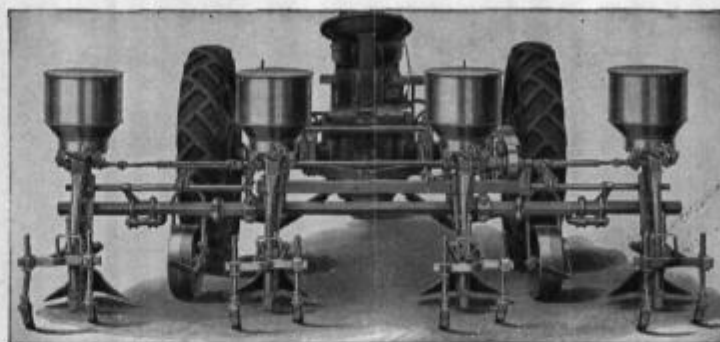


H-10 and HM-10 Tool Bar Middlebusters, Planters, Listers

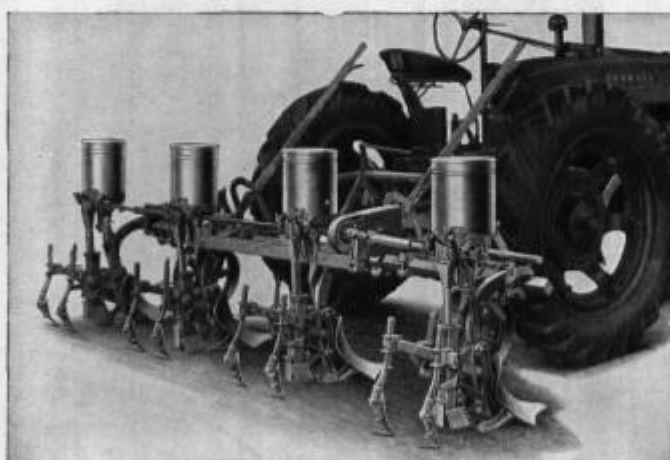
(Continued)



Illust. 1 — The HM-10 with No. 87 lister attachment for cotton and corn.



Illust. 2 — The HM-10 with No. 85 Blackland planter attachment for cotton and corn.

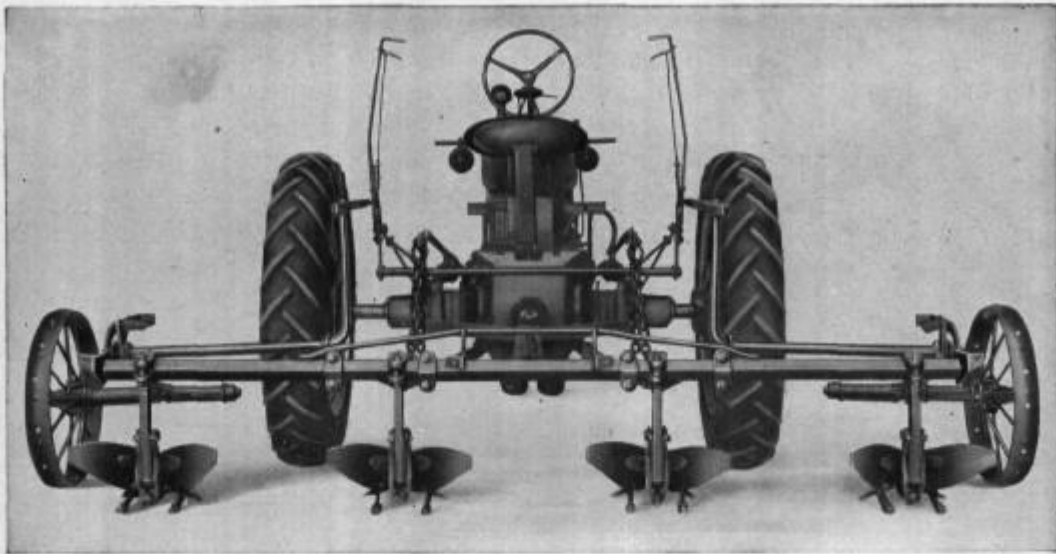


Illust. 3 — The HM-10 with No. 88 lister for corn.

Specifications — Lister and Planter Attachments

No.	Description	Net Weight (Approx.)
78	2 row lister for cotton and corn with No. 11 pin-break shovel covers, less bottoms.....	321 lb.
79	4-row lister for cotton and corn with No. 11 pin-break shovel covers, less bottoms.....	564 lb.
80	2-row loose-ground planter for cotton and corn with 18-in. opener disks, runner openers and open center press wheels.....	435 lb.
81	4-row loose-ground planter for cotton and corn with 18-in. opener disks, runner openers and open center press wheels.....	791 lb.
84	2-row blackland planter for cotton and corn with No. 11 pin-break shovel covers, less planter sweeps.....	355 lb.
85	4-row blackland planter for cotton and corn with No. 11 pin-break shovel covers, less planter sweeps.....	600 lb.
87	2-row lister for corn with No. 11 pin-break shovel covers, less bottoms.....	294 lb.
88	4-row lister for corn with No. 11 pin-break shovel covers, less bottoms.....	510 lb.
89	2-row loose-ground lister for corn with 18-in. opener disks, runner openers and open center press wheels.....	408 lb.
90	4-row loose ground lister for corn with 18-in. opener disks, runner openers and open center press wheels.....	737 lb.

M-11 Tool Bar Middlebusters and Listers



Illust. 1 — The heavy-duty M-11 Middlebuster for Farmalls M and MD tractors. Bar is 135 inches long and can be set to bust rows from 38 to 42 inches apart.

Middlebusters

The M-11 middlebusters are tool bar implements for Farmalls M and MD tractors, designed to provide the basic equipment for a number of planter and lister combinations. It is a flexible machine equipped with large gauge wheels on either end of the heavy steel tool bar. The tool bar is stoutly trussed over the middle, thus adequate reinforcement is supplied with ample flexibility for up and down movement. The M-11 middlebuster is a power lift machine requiring a pair of 2¼-in. Lift-All cylinders. The middlebuster may be used as a 4-row buster, or by removing one or two

bottoms, converted to a 3 or 2 bottom buster, should conditions make such an adjustment advisable.

Row spacings ranging from 38, 40 and 42 inches may be made on the buster.

The M-11 middlebuster has a tool bar of a high-quality steel bar 2¼ inches square, and 135 inches long.

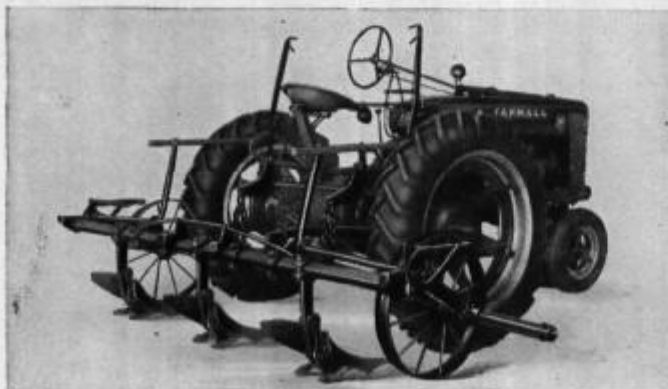
See also pages 142-144 on Attachments and Bottoms.

Planters and Listers

The M-11 middlebuster has a wide range of planters and lister equipment that make the implement more versatile. These machines can be supplied as special equipment to attach to the middlebuster tool bar, or as a complete machine including the tool bar, gauge wheels, etc.

Power for operating the planting mechanism is supplied from a chain from each wheel of the buster, and operates through shaft. The hopper mechanism is protected from damage by safety clutches should any hard object stop the plate drive shaft. Each chain operates two hoppers. The 3-bottom buster arrangement cannot use planting attachments unless another stub beam is ordered.

Planting equipment for the M-11 is supplied with either single seed cotton hoppers for handling cotton and corn plates are regularly furnished for corn planting. Canton-type corn hoppers with large flat-drop plates for



Illust. 2 — M-11 tool bar middlebuster set for busting three rows. Should soil conditions warrant it, the buster can be set for two rows.

For specifications see next page.

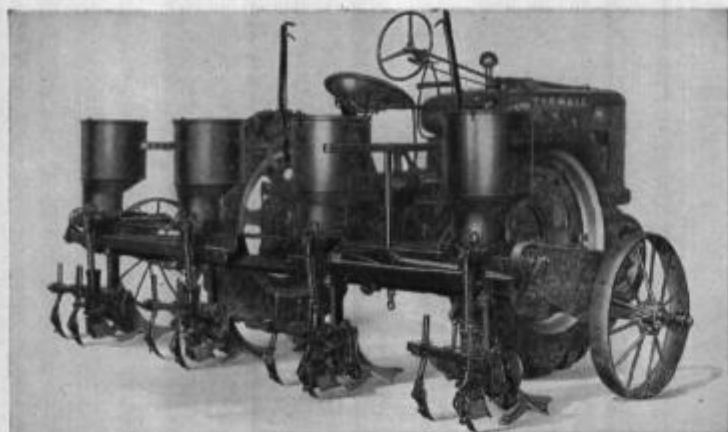


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M-11 Tool Bar Middlebusters and Listers

(Continued)



Illust. 1 — No. M-11-38 four-row corn and cotton lister regularly equipped with combination hoppers.



Illust. 2 — M-11 four-row middlebuster rebusting a field. Rubber tires are special equipment (size, 6:00 x 16).

corn, peas, beans, kaffir, etc. are available. A special auxiliary bottom plate and plates for small seed can also be supplied for both types of hoppers.

Each type of hopper can be used on either lister or loose-ground planting attachment.

The M-11-38 and M-11-39 have combination single-seed cotton and flat-drop corn hoppers with corn cut-offs, cotton plates for planting one to four pecks of seed per acre, corn plates for planting corn 15 to 23½ inches apart, and kaffir corn, 9½ or 11½ inches apart.

Regular Equipment

Middlebusters: As shown in Specifications.

Special Equipment

Middlebuster equipment: Pneumatic-tire gauge wheel (less tire and tube). Extra beam attachment, less bottom. Chisel tooth. 18 or 16 in. sweep. Long spring tooth with clamp and double point shovel. 16, 18 or 10-12-in. sweeps for spring tooth cultivator attachments. 48-in. knife attachment. Fender brackets. Drop retarding valve. 10, 12, 14, 16, 18-in. sweeps.

Planter and lister attachments: As shown in Specifications. Also: Press wheel attachments for No. 11-38 lister and No. 38 planting attachment and M-11-70. No. 4 loose-ground attachment for 11-38 lister and No. 38 planting attachment for M-11-70. Auxiliary seed plates: corn and cotton, or small seed plate bundle.

Specifications

No.	Description	Net Weight (Approx.)
MIDDLEBUSTER		
M-11	4-row with 14-in. bottoms.....	1438 lb.
M-11	4-row with attaching parts and gauge wheels.....	1106 lb.
COTTON AND CORN LISTER PLANTERS		
M-11-38	4-row cotton lister with 14-in. bottom and No. 11 pin break shovel coverers.....	1891 lb.
M-11-70	4-row corn lister with 14-in. bottom and No. 11 pin break shovel coverers.....	1927 lb.
CORN AND COTTON LOOSE-GROUND PLANTERS		
M-11-39	4-row cotton planter with 18-in. opener disks, runner openers and open center press wheels.....	1998 lb.
M-11-71	4-row corn lister with 18-in. opener disks, runner openers, open center press wheels.....	2015 lb.
LISTER ATTACHMENTS FOR M-11 MIDDLEBUSTER		
38	4-row cotton and corn lister attachment.....	469 lb.
39	4-row loose-ground cotton and corn lister attachment.....	714 lb.
70	4-row corn lister attachment.....	502 lb.
71	4-row loose-ground corn lister attachment.....	747 lb.
	Press wheel attachment for No. 11-38 lister and No. 38 planting attachment and M-11-70.....	227 lb.
	No. 4 loose-ground attachment for No. 11-38 lister and No. 38 planting attachment and M-11-70.....	401 lb.
	Chisel tooth attachment.....	249 lb.



HM-71 Middlebusters, Listers and Planters

The HM-71 machines are flexible 2-row units for work in average soil conditions. They have separate beams to permit independent vertical adjustment, and are adaptable to row spacings from 36 to 42 inches. They are regularly equipped for operation with Lift-All but can also be supplied as hand-lift machines.

The listers and planters are all equipped with combination single-seed cotton and flat-drop corn hoppers. A slip clutch on the feed shaft protects the hopper mechanism against breakage.

See also pages on *Attachments and Bottoms*.

Regular Equipment

Four machines as shown in Specifications. Power lift—one 1 $\frac{3}{4}$ -in. Lift-All cylinder required; delayed-lift valve required when used in conjunction with cultivator. 32-tooth drive sprocket and chain.

Combination single-seed cotton hoppers on planters and listers with regular flat drop corn plates. Seed-plates, as ordered. Choice of bottoms for HM-71-A and HM-71-D.



Illust. 2 — Any of the listers and planters can readily be converted into the HM-71-M middlebuster.



Illust. 1 — The HM-71-A, which is the lister.

Special Equipment

Hand lift, when ordered. Helper spring (for use in point rows). No. 91 planting attachment (runner openers and press wheels) to convert HM-71-M to HM-71-D. Bottoms for HM-71-C and HM-71-D. Choice of sweeps for HM-71-C.

Ground tools: No. 12 spring-trip shovel coverers for HM-71-A. No. 11 (14-in.) and No. 12 (12-in.) disk coverers for HM-71-A. No. 15 (12-in.) adjustable disk coverers for HM-71-A. Press wheel attachment for HM-71-A and HM-71-C (for use with No. 11 or No. 12 disk coverers). Loose ground attachment (opener disks, runners and press wheels) for HM-71-A (No. 10, hand lift, and No. 11, power lift). Runner openers for HM-71-C. Dirt shields and runner wings for HM-71-D. Disk markers for HM-71-A and HM-71-C.

Hoppers, planters: Corn and pea attachment—No. 16 for HM-71-A and HM-71-C; No. 22 (shallow planting) for HM-71-D. Pea attachment. No. 7 (8-cell plate) and No. 8 (14-cell plate) peanut attachment. Hill-drop attachment (No. 8 for HM-71-C; No. 3 for HM-71-D).

Specifications

No.	Description	Net Weight (Approx.)
HM-71-A*	Lister for Cotton and Corn with No. 31 14-in. bottoms, and No. 11 pin-break shovel coverers.....	847 lb.
HM-71-C*	Blackland Planter for Cotton and Corn with shovel openers, gauge wheels, No. 11 pin-break shovel coverers and sweeps.....	920 lb.
HM-71-D*	Planter for Cotton and Corn with runner openers and press wheels.....	772 lb.
HM-71-M	Middlebuster with No. 34 14-in. bottoms.....	537 lb.
91*	Planting Attachment for Cotton and Corn with runner openers and press wheels, to convert HM-71-M to HM-71-D.....	480 lb.

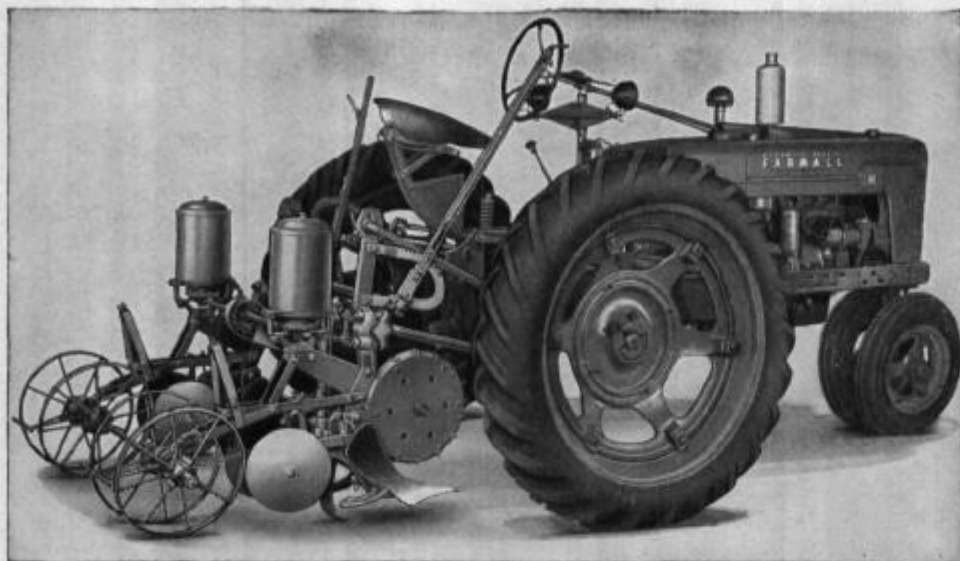
*Orders must specify whether for Farmall-H or for Farmalls M or MD.



INTERNATIONAL HARVESTER



HM-46 and HM-47 Two-Row Farmall Listers



Illust. 1 — The HM-46 corn lister. The quick-attachable frame is mounted in the channels of the tractor drawbar.

Here are compact, 2-row listers for use with Farmalls H and M. They are direct-connected, power-lift machines and are adjustable for work in 36, 38, 40 and 42-in. rows. The HM-46 is the lister for corn, the HM-47 is for cotton.

The entire unit, suspended by parallel linkage, is carried close to the ground on a single, 2-in. square tool bar. A pair of ground-drive wheels mounted just ahead of the tool bar assures even spacing of the seed when working on hilly fields because the spacing is not dependent on the tractor drive wheel. It also provides accurate depth control in uneven ground. One lever sets the wheels for depth of planting; a second lever levels the tool bar for variations in depth between the two rows. Adjustments are provided on the parallel linkage to regulate penetration of the bottoms and pressure on the wheels under varying soil conditions. The feed shaft has sprockets of different sizes to supply a wide variety of seed spacings.

See also pages on *Attachments and Bottoms*.

Regular Equipment

HM-46: Richmond corn hoppers for edge-drop, flat-drop and full-hill-drop plates. Seed plates, as ordered. No. 31 14-in. bottoms. No. 21 12-in. disk covers. POSS-25 subsoiler. Press wheels. 3 sprockets on drill shaft to provide 6 different drilling distances.

HM-47: Single cotton hoppers with flat-drop corn seedplates. Seedplates as ordered and cut-off. No. 31 14-in. bottoms. Pin-break shovel covers.

Special Equipment

Corn and pea attachments—No. 18 for HM-46; No. 16 for HM-47. No. 28 hill-drop attachment for HM-47. Loose-ground attachments—No. 9 for HM-46; No. 8 (with press wheels) for HM-47. No. 22 14-in. disk covers for HM-46. Subsoilers. Seedplates for small seed such as kaffir. Brush cut-off.



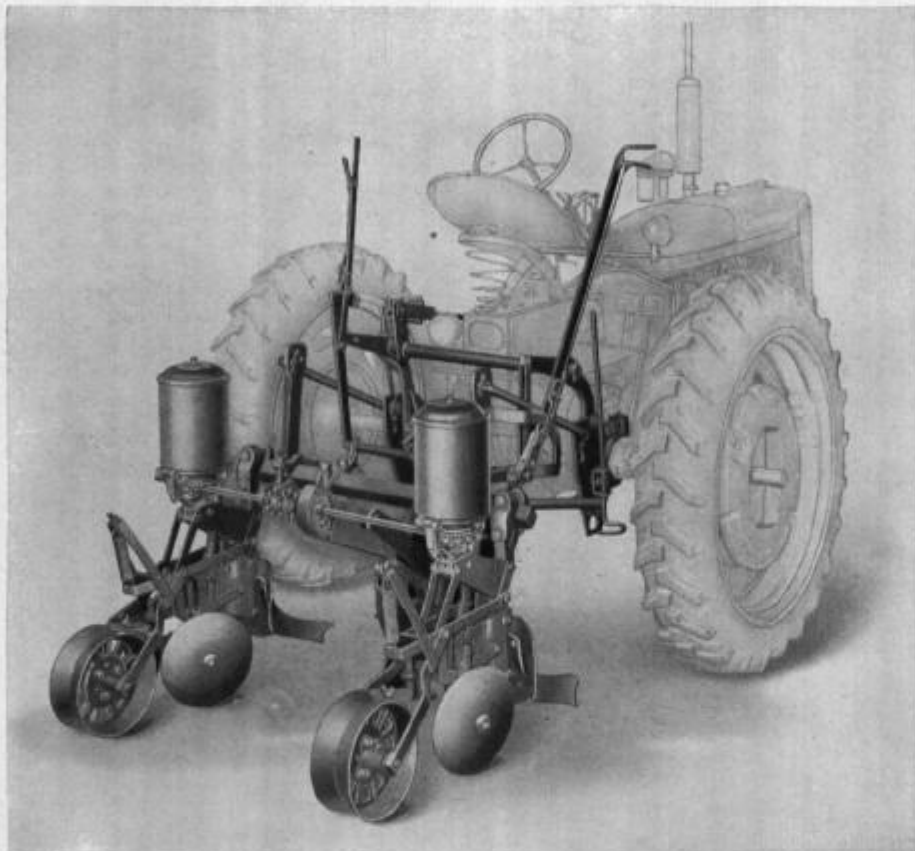
Illust. 2 — The HM-47 lister for cotton and corn.

Specifications

No.	Description	Net Weight (Approx.)
HM-46	Corn lister	830 lb.
HM-47	Cotton and corn lister	757 lb.
9	Loose-ground attachment for HM-46	128 lb.
16	Corn and pea attachment	118 lb.



Farmall C
C-46 Two-Row Corn Lister
C-47 Two-Row Cotton and Corn Lister



Illust. 1 — This is the C-46 corn lister on a Farmall C tractor. The C-46 lister has 12-inch bottoms, 12-inch disk coverers, subsoilers, press wheels, and Richmond type hoppers.

- Direct-connected and quick-attachable.
- Raised and lowered by hydraulic Touch-Control.
- Wide variety of seed plates available.
- Ground drive assures uniform seed spacing uphill and down.
- Gauge wheels assure uniform planting depth in uneven terrain.
- Bottom suction automatically changed to suit ground conditions.

Compact Two-Row Listers

The C-46 corn lister and C-47 cotton and corn lister are two-row, direct-connected, Touch-Control operated listers for use exclusively with the Farmall C tractor. The furrow opening and planting mechanism of these machines is similar to that of the HM-46 and HM-47 listers, but the method of attaching and controlling them is different. Both listers can be adjusted to plant two rows 36, 38, 40, or 42 inches apart. Extra sprockets on the hopper drive shaft provide a wide range of seed spacing in the row.

Regular Equipment

C-46: Richmond corn hoppers for edge-drop, flat-drop, and full-hill-drop plates. Seed plates as ordered, two per hopper. No. 31-A 12-inch high-speed bottoms, with runners unless ordered otherwise. No. 21 disk covering attachments. POSS-25 subsoilers (chisel point type). Press wheels. Five sprockets on hopper drive shaft, providing five different seed spacing intervals in the row.

C-47: Single seed hoppers (straight drum), with seed plate bundle according to territory. No. 11 pin break shovel type covering attachments. No. 31-B 12-inch high-speed bottoms, with runners unless ordered otherwise.



Illust. 2—This is a close-up view of the C-47 two-row cotton and corn lister mounted on a Farmall C tractor. The C-47 lister has 12-inch bottoms, pin break shovel coverers, and single seed cotton and corn hoppers.



Farmall C

C-46 Two-Row Corn Lister

C-47 Two-Row Cotton and Corn Lister

(Continued)

Special Equipment

C-46: No. 43240-A brush cut-off for use with 3559-A seed plate. No. 22 14-inch disk covering attachments. POSS-14, POSS-22, and POSS-26 subsoilers. No. 27 corn and pea attachments (illustrated on page 191-C). No. 9 loose ground attachment. No. 620 370 R91 grooved hopper bottom plate attachment. No. 515 261 R91 disk type marker attachment. No. 1596-B 13-tooth sprocket for hopper feed shaft. No. 31-B 12-inch high-speed lister bottoms with runners. No. 32-A 12-inch high-speed lister bottoms without runners. No. 32-B 12-inch high-speed lister bottoms without runners.

C-47: No. 162 seed plate bundles (for beans). No. 12 spring trip shovel covering attachments. No. 21 disk covering attachments. POSS-14, POSS-22, POSS-25, and POSS-26 subsoilers. No. 16 corn and pea attachment with No. 139 and 149 seed plate bundles (regular) or with No. 169 seed plate bundle (special). No. 8 loose ground attachment. PO-2786 seed plates, 26 cell, cotton. PO-2937 seed plates, 13 cell, cotton. No. 515 260 R91 press wheel attachment (will not work with No. 11 and No. 12 shovel type covering attachments). No. 515 261 R91 disk type marker attachment. No. 1596-B 13-tooth sprocket for hopper feed shaft. PO-2943 9-tooth sprocket for hopper feed shaft. No. 31-A 12-inch high-speed bottoms with runners. No. 32-A 12-inch high-speed bottoms without runners. No. 32-B 12-inch high-speed bottoms without runners.

Specifications

No.	Description	Row Spacing	Net Weight (Approx.)
C-46	Corn lister.....	36, 38, 40, 42	838
C-47	Cotton and corn lister.....	36, 38, 40, 42	794

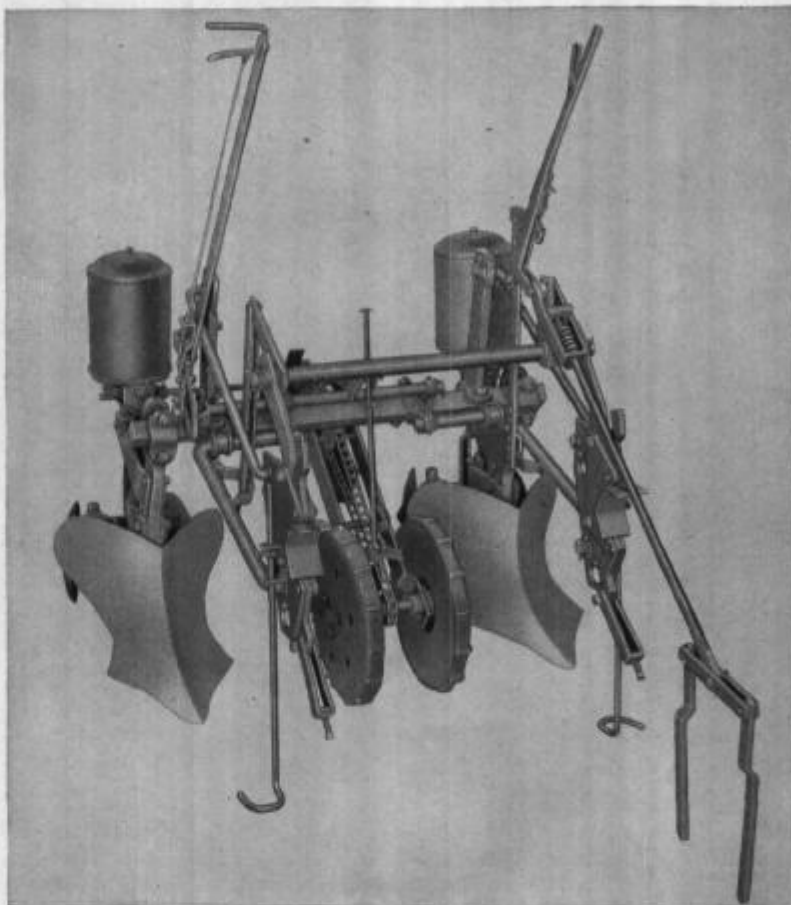
Direct-Connected, Quick-Attachable Listers

C-46 and C-47 lister owners enjoy the easy maneuverability and other advantages of direct-connected equipment without having to pay an onerous time-and-work penalty when attaching and detaching the lister from the tractor. These listers, which stand on their own supports when removed from the tractor (see illust.), are quickly secured to or freed from the hexagonal rear axle housings of the tractor. It is necessary only to tighten or loosen the set screw holding the swinging clamps.

The listers are connected to the tractor attaching plates by parallel linkage. Alternate holes in the attaching plates permit attachment of the upper and lower parallel links at different points in order to maintain the same range of depth adjustment regardless of tractor tire size (see owner's manual).

Raised and Lowered by Hydraulic Touch-Control

These two Farmall C listers are raised and lowered by hydraulic Touch-Control. It should be noted that



Illust. 1 — Here the C-46 corn lister, held upright by the bottoms and the built-in support rods, stands by itself after removal from the tractor (Farmall C). This view shows clearly the quick-attaching brackets, the combination ground-drive and gauge wheels, and the yoked control arms which are connected to the two left-side Touch-Control power arms.

the control linkage attaches to the power arm of both hydraulic cylinders and that the operator uses both Touch-Control levers in raising and lowering the lister. The use of both Touch-Control levers is necessary in order to make available the power required to raise the lister out of the ground easily and quickly.

Seed Plates To Meet All Needs

The C-46 corn lister has the well-known Richmond type corn hoppers for which a wide variety of edge-drop, flat-drop, and hill-drop seed plates is available (see the list in the corn planter section of this catalog). Two plates per hopper are regularly supplied for the C-46, and these must be specified by their part numbers on dealers' orders.



Farmall C
C-46 Two-Row Corn Lister
C-47 Two-Row Cotton and Corn Lister
(Continued)

Seed plate bundles for the C-47 cotton and corn lister, which has the single seed cotton hopper, are supplied according to the special needs of the territory the lister is to be used in. These bundles have been made up to conform to the known preferences of users. All territories get two No. 167 bundles. Dallas, Oklahoma City, Amarillo, San Antonio, and Houston territories get two No. 188 bundles. All other territories get two No. 185 bundles. (See owner's manual for bundle particulars.)

**Ground Drive Assures
Uniform Seed Spacing**

The hoppers of the C-46 and C-47 listers are driven through a set of bevel gears on the hopper drive shaft which, in turn, is chain-driven from two combination gauge and ground-drive wheels running on the ground between the two lister bottoms.

Gauge or ground wheel drive is superior to power drive from the tractor because seeds are dropped in strict conformity with the travel speed of the lister and therefore at uniform intervals. Gauge or ground wheel drive assures accurate spacing of seed in the row, uphill and down, regardless of tractor wheel slippage on the tough pulls.

Another factor contributing to C-46 and C-47 planting accuracy is the low-down position of the hoppers, which are mounted on brackets secured to the lister bottom beam. The hoppers are close to the ground and the seeds, dropping only a short distance, reach the ground without interference in the tube. They drop cleanly at regular intervals.

**Gauge Wheels Assure
Uniform Planting Depth**

The gauge wheels not only assure planting accuracy; they also assure planting at uniform depth in uneven

terrain. The gauge wheels, rolling along close to the lister bottoms, follow the rise and fall of the land in fields which are not level and keep the bottoms working at approximately the same distance beneath the surface. Supplementary adjustments, to assure planting at the proper depth in extra soft or extra hard spots in the field, can be made by means of the depth adjusting lever at the driver's right. The leveling lever, at the driver's left, enables the driver to adjust the depth of the bottom on one side to match the depth of the bottom on the other side when the lister is being operated along a slope.

**Bottom Suction Automatically Changed
To Suit Ground Conditions**

An incidental but extremely important effect of gauge wheel control of planting depth is the simultaneous control of bottom suction through action of the parallel linkage supporting the lister. This effect is noted when traversing soft or hard spots in the field. Actually, the parallel linkage is not quite parallel and, as the lister encounters hard soil and the gauge wheels ride higher, the bottoms are automatically given more "suck" . . . a greater downward deflection . . . to assist in maintaining proper depth. Conversely, as the gauge wheels sink in a soft spot, the tips of the shares are pointed slightly upward to aid in maintaining the desired depth until the gauge wheels are again riding at normal level.

Reversible Seed Furrow Opener

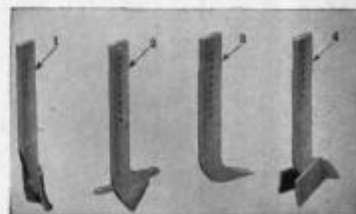
The seed furrow opener regularly supplied on both C-46 and C-47 listers is of the double-point, reversible, shovel type. This double-duty, double-wear type of furrow opener is very economical.

Special Equipment



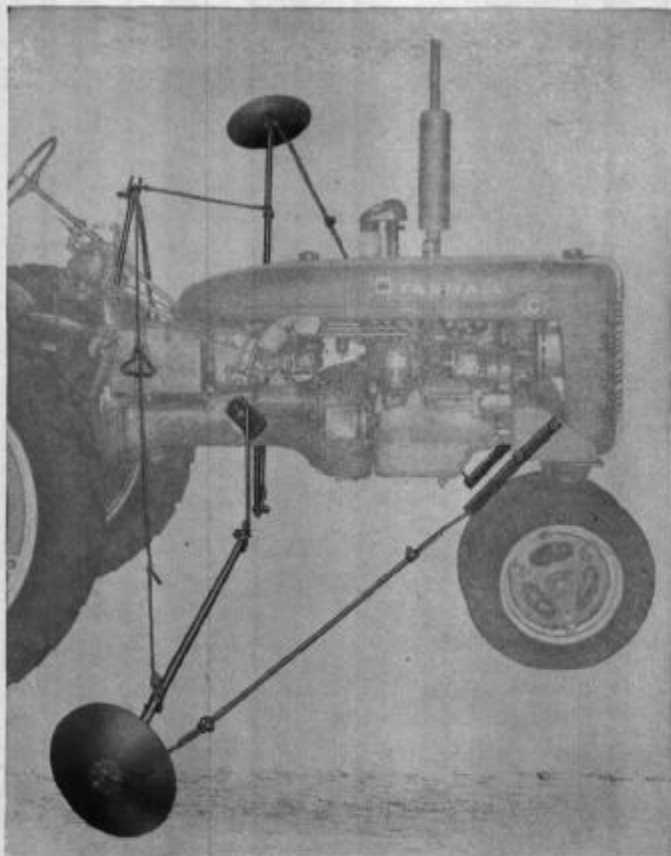
Illust. 1 — Loose ground attachment No. 8 (illustrated) is for C-47 listers. Attachment No. 9 for C-46 listers is the same but does not include the press wheel. These attachments are for use in loose, yielding soil where regular lister bottoms and covers cannot be operated satisfactorily.

Illust. 2 — Four subsoilers are available: (1) POSS-14, shovel type, for C-46 and C-47; (2) POSS-22, duck-foot type, for C-46 and C-47; (3) POSS-25, chisel point type, for C-47 only; and (4) POSS-26, opener wing type, for C-46 and C-47.



Farmall C
C-46 Two-Row Corn Lister
C-47 Two-Row Cotton and Corn Lister
(Continued)

Special Equipment (Continued)



Illust. 1 — This disk marker attachment (No. 515 261 R91) is available on special order for use with both C-46 and C-47 listers. The disks are raised and lowered by the tractor operator and are easily secured in the raised position.

Illust. 2 — This is the No. 16 corn and pea attachment supplied on special order for use with the C-47 lister only. It takes the No. 139 and 149 seed plate bundles (regular) or the No. 169 seed plate bundle (supplied on special order). With this attachment installed, the C-47 lister operator can plant peas or beans at the same time he is planting corn.



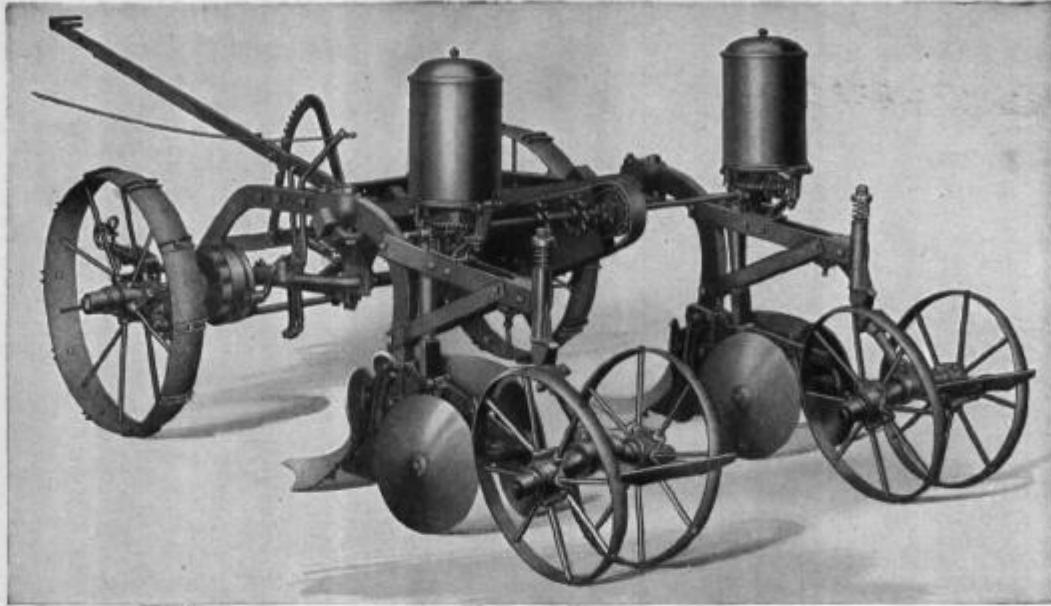
Illust. 3 — This brush cut-off attachment is available on special order for C-46 lister hoppers when seed plate No. 3559-A is used. The action of the brush cut-off is gentler than that of the regular cut-off pawl and is recommended for use when seeds are small and tender.



Illust. 4 — This is the No. 12 spring trip shovel covering attachment, which can be ordered specially for use on the C-47 lister. The C-47 is regularly equipped with the pin break type of shovel coverer.

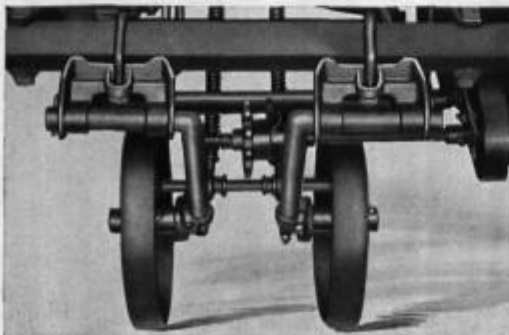


No. 182 Two-Row Lister



Illust. 1 — No. 182 two-row lister.

The No. 182 is a short-coupled, two-row trailing lister with hoppers for using flat, edge, or hill-drop plates. Three sprockets on the drill shaft provide drilling distances of 10 to 45 inches in the row. The hoppers can also be equipped for planting small seeds, which can be spaced from 7 to 33 inches in the row.



Illust. 2 — Guide wheel attachment for use when relisting. It runs in the furrow, holding the lister on the ridges.

These listers are adjustable for row spacings from 36 to 42 inches and are equipped with plow-type power lift. The front wheels can be adjusted from 42 to 56-in. tread to line up with the bottoms.

Regular Equipment

No. 31, 14-in. bottoms. No. 21, 12-in. disk coverers. No. 28 subsoiler. POTH-191 tractor hitch (pin-break).

Special Equipment

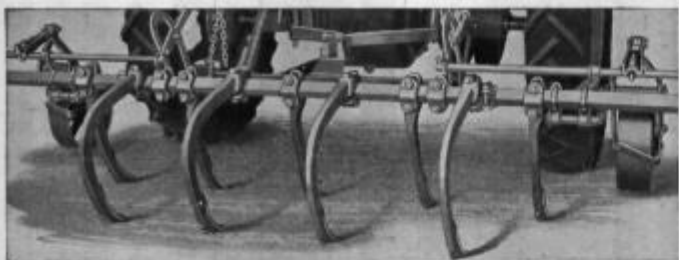
Seedplates for small seed. Brush cut-off. No. 22, 14-in. disk coverers. Nos. 29, 30 and 31 subsoilers. Rolling colters. Guide wheel attachment. POTH-192 spring-release hitch.

Specifications

No.	Description	Net Weight (Approx.)
182	Two-row lister.....	874 lb.
.....	Guide wheel attachment.....	67 lb.



Attachments for Middlebusters, Listers and Planters



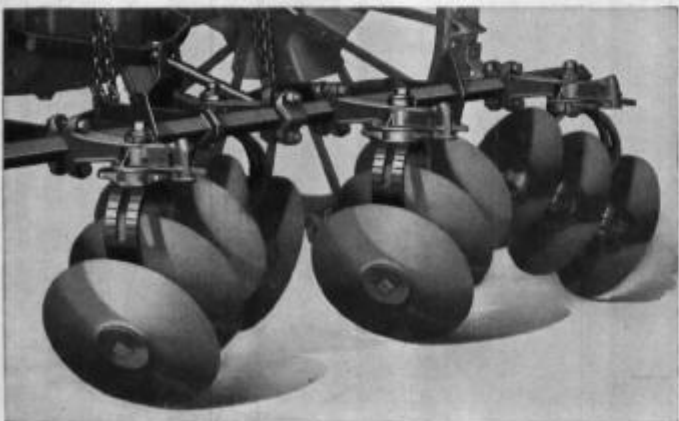
Illust. 1 — Chisel-tooth attachment to clamp on any tool bar middlebuster. Shown mounted on the HM-10.



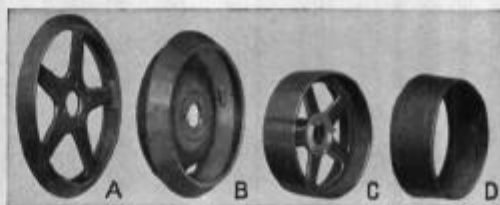
Illust. 2 — 48-in. knife attachment available for H-10, HM-10 and M-11 tool bar middlebusters. One pair is required for each row.



Illust. 3 — Plain 16-in. rolling colter available for tool bar middlebusters. It can also be supplied with notched blade and in different sizes.



Illust. 4 — Disk attachment for tool bar middlebusters. Disk is adjustable for tilt and angle. Clamps directly to tool bar. Shown on H-10 middlebuster.



Illust. 5 — (A), V-type gauge wheel — regular on the H-10 middlebuster, special for M-10. (B), V-type gauge wheel, 4-inch rim, special for H-10 and HM-10. (C), flat-tire gauge wheel regular on HM-10, special for H-10. (D), rubber overtire for flat-tire gauge wheel.



Illust. 6 — Spring-trip attachment for tool bar middlebusters and listers.

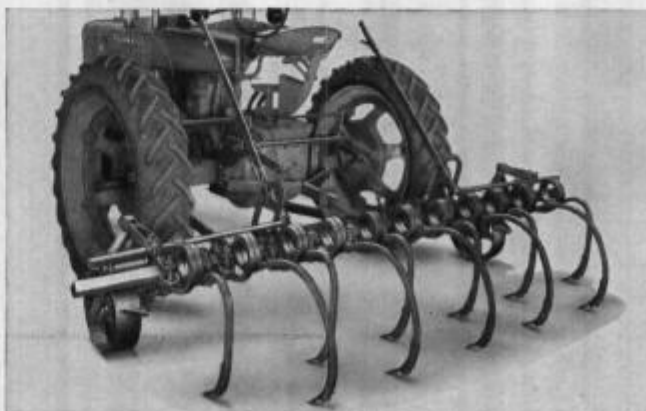


Illust. 7 — Spring-trip shovel covering attachment for middlebusters and listers.



Illust. 8 — Subsoil attachment for tool bar middlebuster. Note rubber pneumatic tire and wheel.

Illust. 9 — Extra beam attachment for all tool bar middlebusters. When ordered as a sweep beam, the spacers are not included.



Illust. 10 — Spring-tooth attachment for HM-10 and M-11 tool bar middlebusters.



Attachments for Middlebusters, Listers and Planters

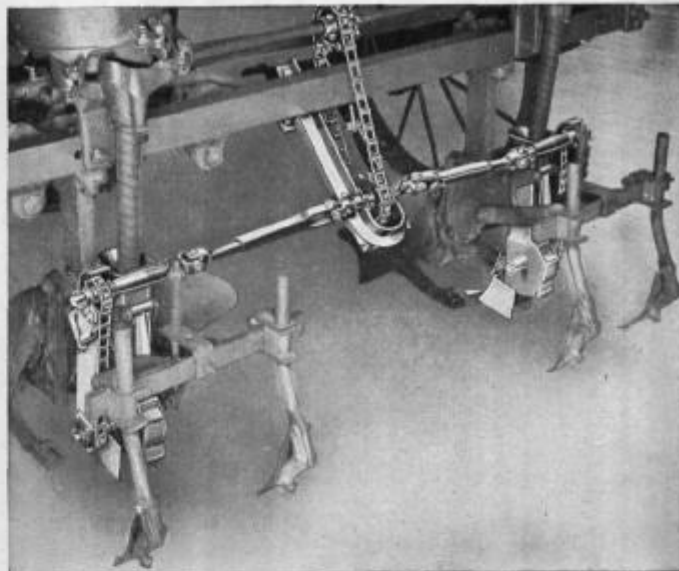
(Continued)



Illust. 1 — Disk coverer attachment available for tool bar listers and the HM-71 and HM-46 lister.



Illust. 2 — Runner opener available for tool bar planters and listers.

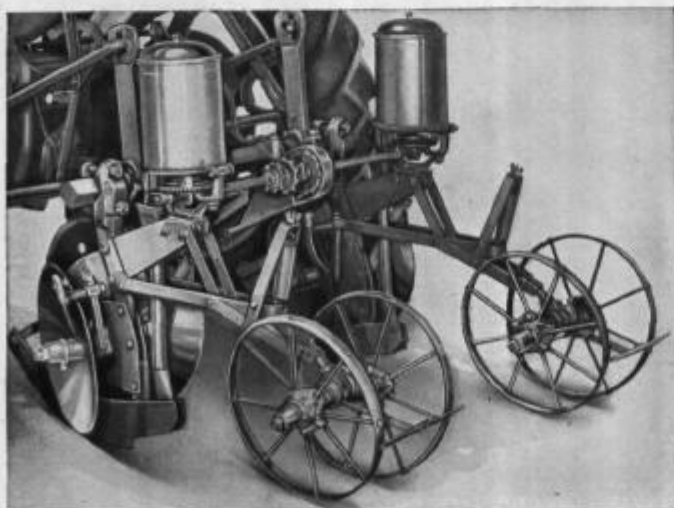


Illust. 5 — Hill-drop attachment available for tool bar listers and the HM-71 lister.

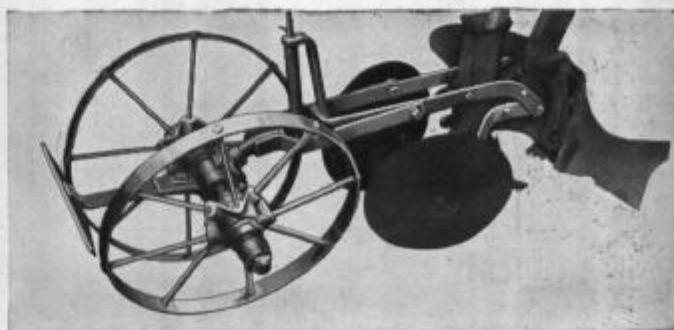


Illust. 3 — Open-center press wheel attachment for listers not equipped with disk coverers.

Illust. 6 — Drill planter attachment for middlebusters. It has a combination hopper for various seed crops.



Illust. 4 — Loose-ground attachment for the HM-46, HM-47, and other listers, shown with trailing double press wheels.



Illust. 7 — Double press wheel attachment for tool bar listers and for the HM-71. A similar attachment can be supplied for the HM-46.



Lister and Middlebuster Bottoms



Illust. 1 — No. 33 middlebuster bottom.

Illust. 2 — No. 34 middlebuster bottom with runners. No. 33 is similar but has no runners.



Illust. 3 — No. 31 lister bottom. The No. 32 is similar, but has no runners.



Illust. 4 — No. 31 lister bottom. No. 36 is similar, but has a shorter moldboard for high-speed work in sandy soils.

High Speed Lister Bottoms*

Machines Used On	31-A, 12 in.	31-B, 12 in.	31-C, 12 in.	31-A, 14 in.	31-B, 14 in.	31-C, 14 in.	31-D, 14 in.	31-E, 14 in.	32-A, 12 in.	32-B, 12 in.	32-C, 12 in.	32-A, 14 in.	32-B, 14 in.	32-C, 14 in.
LISTERS:														
HM-46, 47, 71-A, 182.....				x	x							x	x	
COMBINATION LISTERS:														
H-10-78, HM-10-78, HM-10-79, H-10-87, HM-10-87, HM-10-88, M-11-38, M-11-70.....				x	x							x	x	
HM-10-84.....		x												
LISTER PLANTING ATTACHMENTS:														
Nos. 38, 70, 78, 79, 82, 87, 88, 95.....				x	x							x	x	
MIDDLEBUSTERS:														
HM-19, M-19, H-10, HM-10.....	x	x	x	x	x	x	x	x	x	x	x	x	x	x
M-11 Middlebuster.....	x	x	x	x	x	x	x	x	x	x	x	x	x	x
B-15 Middlebuster.....	x	x	x						x	x	x			

High Speed Middlebuster Bottoms*

Machines Used On	33-B, 12 in.	33-C, 12 in.	33-B, 14 in.	33-C, 14 in.	33-B, 18 in.	33-C, 18 in.	33-B, 20 in.	33-C, 20 in.	34-B, 10 in.	34-C, 10 in.	34-B, 12 in.	34-C, 12 in.	34-B, 14 in.	34-C, 14 in.	34-B, 18 in.	34-C, 18 in.	34-B, 20 in.	34-C, 20 in.
B-7 Middlebuster.....									x	x								
HM-19 and M-19 Middlebusters.....			x		x		x				x	x	x	x	x	x	x	x
H-10, HM-10, M-11 Middlebusters.....			x	x	x	x	x		x	x	x	x	x	x	x	x	x	x
A-14 Middlebuster.....			x										x	x				
B-14 Middlebuster.....													x	x				
B-15 Middlebuster.....	x	x							x	x	x	x						
HM-71-M Middlebuster.....													x					
Middlebuster attachments for HM-71-D planter.....													x					
Cub-16 Middlebuster.....									x	x								
A-16 Middlebuster.....			x										x	x				
C-18 Middlebuster.....	x	x							x	x		x						

High Speed Lister Bottoms (Modified Moldboard)

Machine Used On	36-B 10 in.	36-C 10 in.	36-B 12 in.	36-C 12 in.	36-B 14 in.
B-7 Middlebuster.....	x	x			
H-10, HM-10, M-11, M-19, HM-19 Middlebusters.....			x	x	x
A-14, B-14, HM 71-M Middlebusters.....					x
B-15 Middlebuster.....	x	x	x	x	
Middlebuster attachments for HM-71-D Planter.....					x

* Letters following bottom identification numbers indicate material:

A—Soft-center moldboard and soft-center share.
B—Soft-center moldboard and solid share.

C—Solid moldboard and solid share.

D—Soft-center moldboard and chilled share.

E—Solid moldboard and chilled share.



A-5 Bedder and Cultivator

(For Farmall-A)



Illust. 1 — All A-5 ground tools are carried on a common basic frame (CIU-1). The power lift assures accurate depth control and the simple tool bar makes it easy to adjust the units for a wide variety of operations.

Versatile Tool Bar Equipment for Vegetable Growers

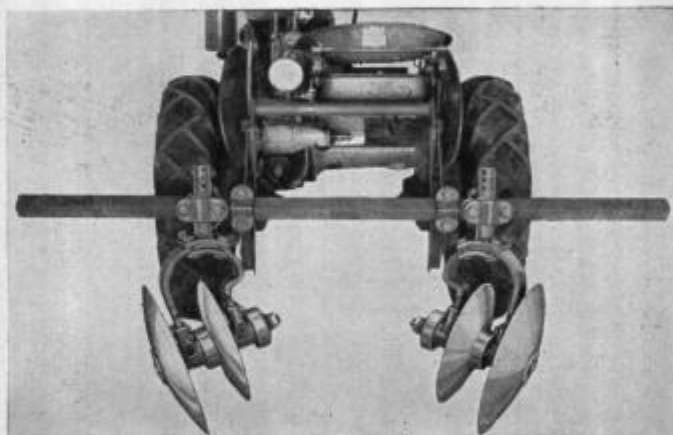
The A-5 bedder and cultivator, built for use with Farmall-A tractors, is well suited for work in potatoes, vegetables and similar crops planted on high beds. It is a tool bar machine with readily adaptable units for busting ridges and running middles, for tearing down and building beds, and for cultivating.

The basic frame consists of a 78-inch tool bar, 2 inches square, and a lifting rockshaft, supplied complete with

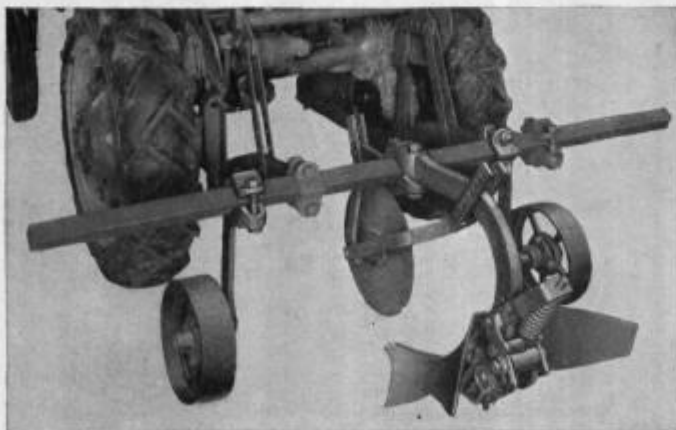
connecting parts for operation with pneumatic Lift-All.

Equipment is available in separate units to enable the operator to select tools to meet his individual requirements. On this page are shown middlebuster units, disk gangs, colters, and gauge wheels suitable for use in sandy loam soil for building up beds for potatoes and similar crops. On the following page appears similar equipment for use in vegetables.

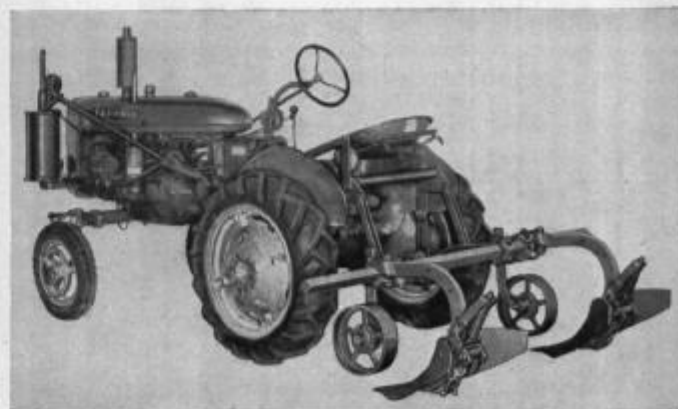
See next page for Specifications.



Illust. 3 — The CIU-8 disk unit consists of two gangs, each with two plain disks, one 16-in. and one 20-in. and spaced at 6½ inches. The gangs are reversible and fully adjustable for tilt and angle of cut.



Illust. 2 — The CIU-7 middlebuster unit has an arched stub beam and spring trip for effective operation in heavy growth and rooty soils. Gauge wheels and a 16-in. rolling colter, to split the ridges and cut through vines, are supplied when ordered. Bottoms ordered should be equipped with heel bolt.

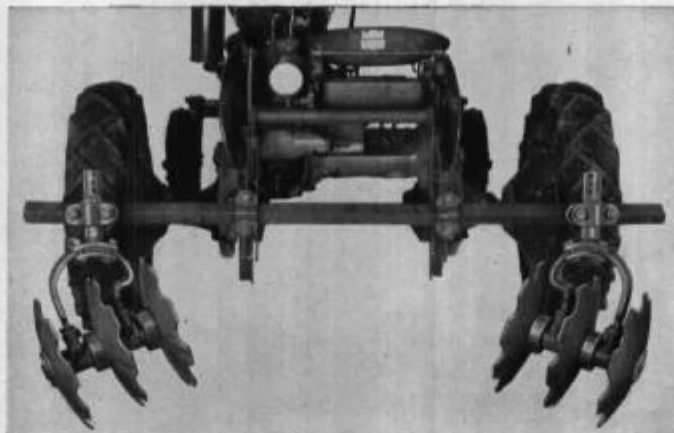


Illust. 4 — Two CIU-7 middlebuster units and two gauge wheels adapt the machine for running middles. Units are adjustable for 38, 40, or 42-in. rows.

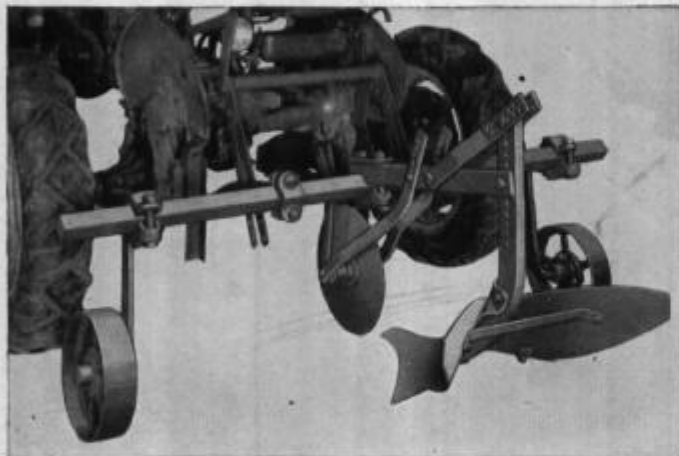


A-5 Bedder and Cultivator

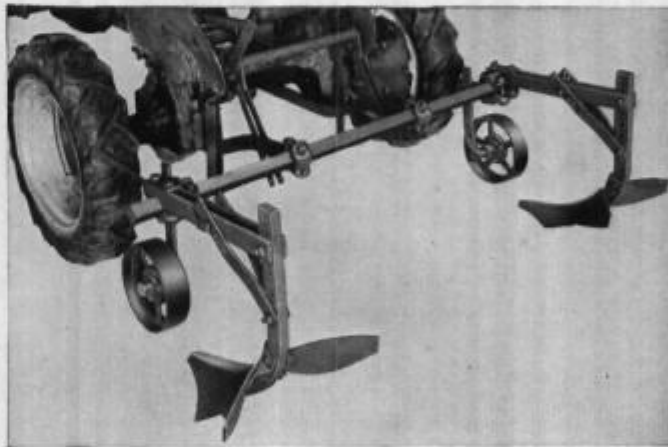
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Illust. 1—The CIU-10 unit consists of two gangs, each carrying three 18-in. cut-out disks at 6½-in. spacing.



Illust. 2—The CIU-9 middlebuster unit, together with gauge wheels and 16-in. plain blade rolling colter attachments, set up for capping beds. A 22-in. bottom with 22-in. share is recommended for this operation.



Illust. 3—Two CIU-9 middlebuster beam units and a pair of gauge wheels equip the A-5 bedder for sinking middles; 22-in. bottoms with 10-in. shares should be used.

Specifications

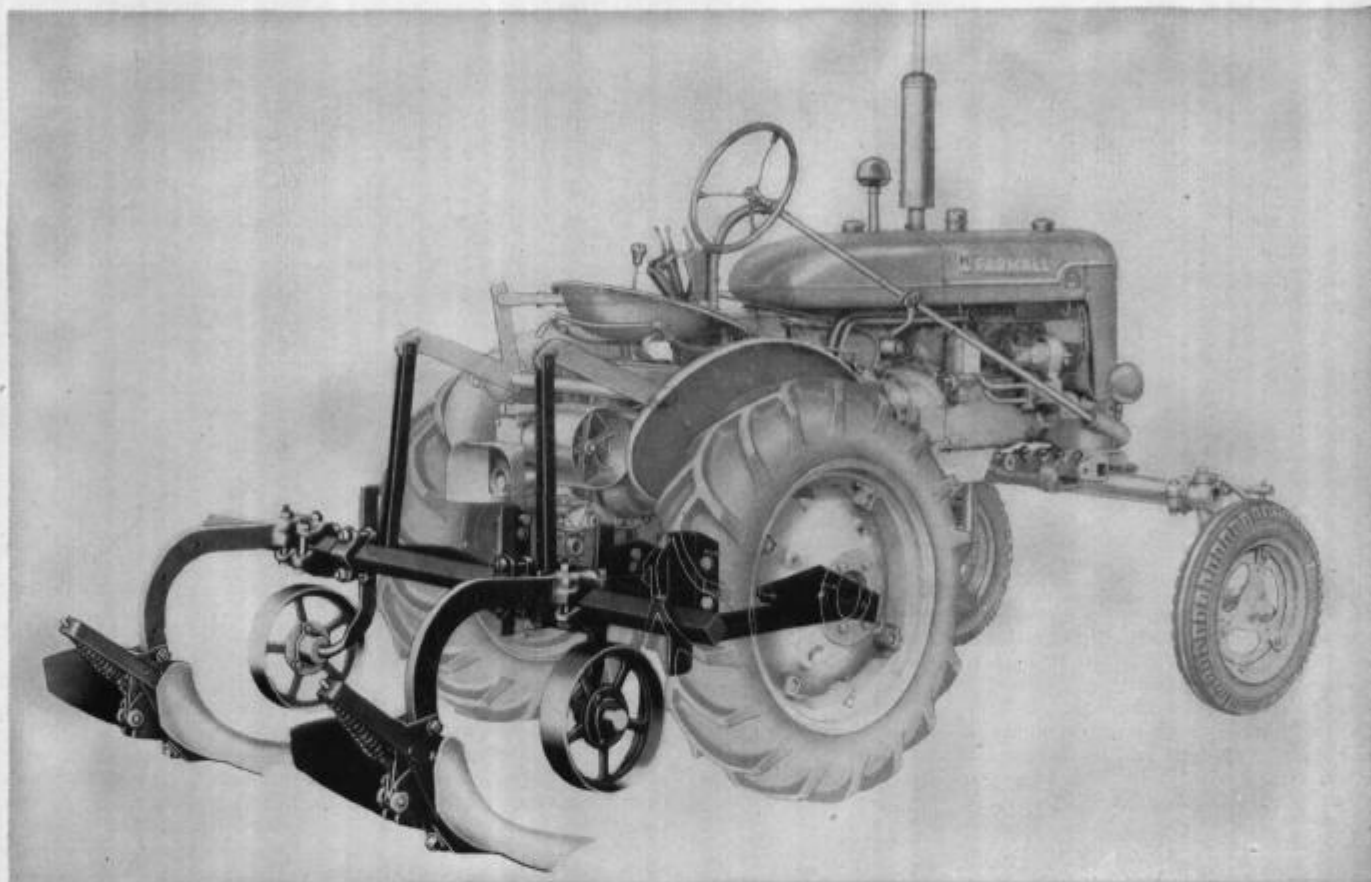
No.	Description	Net Weight (Approx.)
CIU-1	Common Frame (rockshaft, pull irons, tool bar).....	297 lb.
CIU-7	Arched-Beam Middlebuster unit (one beam and bottom with heel bolt).....	74 lb.
CIU-8	Four-Disk Cultivating Unit (one 16-in. and one 20-in. plain disk per gang).....	.....
CIU-9	Straight-Beam Middlebuster Unit (one beam with either 22-in. bottom with 10-in. share for sinking middles or 22-in. bottom with 22-in. share for capping, as ordered).....	91 lb.
CIU-10	Six-Disk Cultivating Unit (three 18-in. cut-out disks per gang).....	222 lb.
PORC-203	16-in. Plain Rolling Colter, for use with CIU-7 or CIU-9.....	46 lb.
PORC-204	16-in. Notched Rolling Colter, for use with CIU-7.....	46 lb.
	Gauge Wheels (one left hand and one right hand), for use with CIU-7 or CIU-9.....	52 lb.



Farmall Super-A

A-6 Bedder and Cultivator

Rear-Mounted



Illust. 1 — The A-6 bedder with two spring-trip middlebusters set for running middles (Florida equipment). This is only one of six bedder and cultivator attachments that are available for the specialized vegetable farming operations practiced in Florida and Louisiana. The Florida equipment is designed for use in sandy soil. Spring trips protect the equipment against roots. The Louisiana equipment is designed for use in heavy, river-bottom land where the soil is relatively free from heavy roots, but, where there is a heavy growth of vines and weeds. Each type of equipment will do an efficient job under the conditions for which it is designed.

- Ideal for busting ridges and running middles — for tearing down and building beds.
- For the cultivation and maintenance of beds.
- Designed for Quick-change.
- Simple and easy to operate.
- Tool bar floats freely vertically.
- Farmall Touch-Control for effortless raising and lowering.

A Versatile Bedder and Cultivator

The A-6 is rear-mounted on the Farmall Super-A tractor to form an efficient combination bedder and cultivator for the vegetable grower in Louisiana and Florida. It is a simple unit that is easy to operate and designed for quick-change. The A-6 bedder and cultivator, with various ground tools which are available

on special order, is designed to prepare and maintain beds for potatoes, cabbages, and in fact most any vegetable crop planted on high beds.

A Universal Rockshaft

The A-6 bedder and cultivator requires one Universal (rigid) Rockshaft for raising and lowering the unit. The Universal (split) Rockshaft, designed for use with the A-189 one-furrow, two-way plow, can be used equally well in place of the rigid rockshaft for this unit. If the purchaser contemplates buying the two-way plow, it is recommended that he use the split rockshaft in order to avoid the purchase of both rockshafts.

Free-Floating Tool Bar

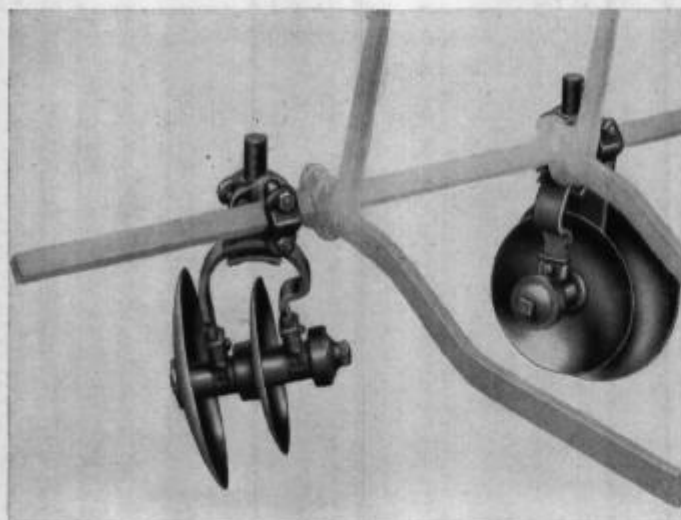
This bedder consists of a 2-inch square tool bar 78 inches long which attaches to the Tractor Mounting Pads on the tractor rear housing by means of draft beams and attaching plates. Stabilizing plates reduce side motion to a minimum while permitting the draft beams to move vertically. This feature leaves the tool bar and the ground equipment free to float.



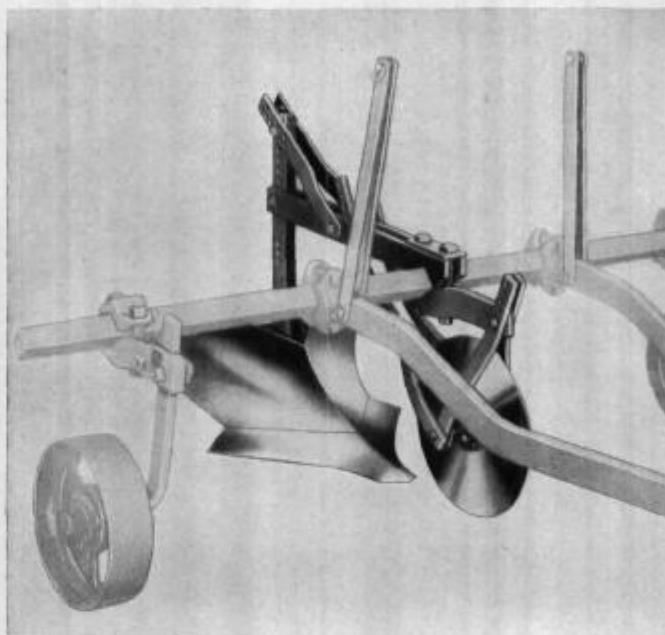
Farmall Super-A

A-6 Bedder and Cultivator

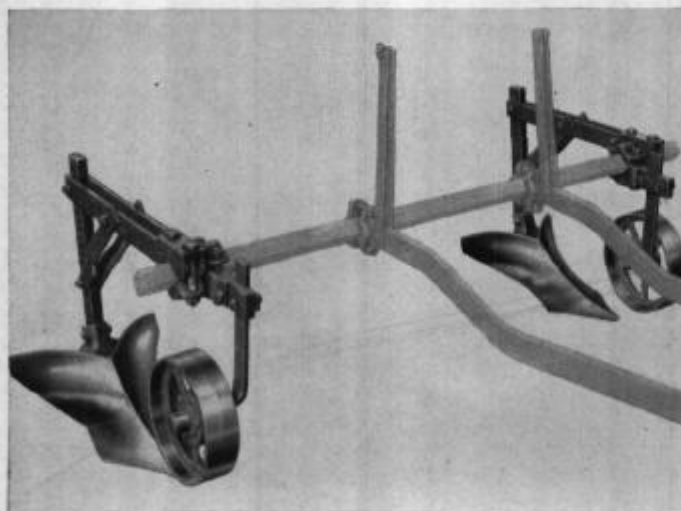
Rear-Mounted (Continued)



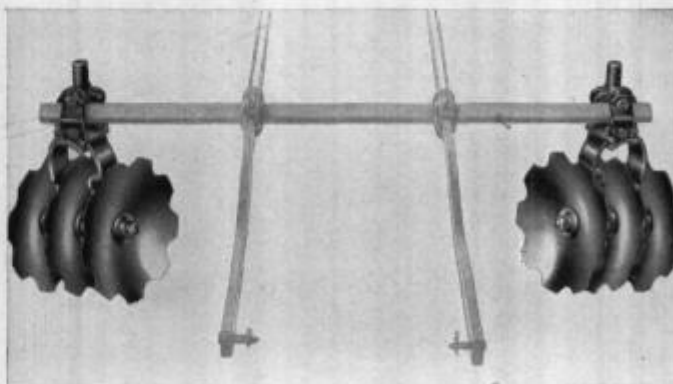
Illust. 1—(Florida Equipment) The A-6 bedder with the CIU-8 disk cultivating equipment (furnished only when ordered). This attachment consists of two gangs, each carrying one 16-inch and one 20-inch plain disk with $6\frac{1}{2}$ -inch spacing. It is excellent for cultivating bedded crops and for maintaining beds. The unit is set for straddling a single row bed. Used in this manner, the disks cut the weeds on the sides of the beds and at the same time throw the dirt up to the top of the bed. The gangs are reversible and fully adjustable for tilt and angle of cut.



Illust. 2—(Louisiana Equipment) The A-6 bedder with the CIU-9 middlebuster attachment set for busting beds. This busting attachment consists of a middlebuster beam with attaching parts. Because of the extreme height of the beds in the Louisiana area, the attaching parts are made to give the operator a wide variety of adjustments. For busting, one 22-B 22-inch bottom is required. Orders should specify by number the bottom desired. The 16-inch rolling colter (plain or notched) used especially to cut vines and other heavy growth on top of beds on the rebusting operation, should be ordered for use with this unit. Gauge wheels (right and left-hand) are also necessary and should be ordered.



Illust. 3—(Louisiana equipment) The A-6 bedder with the CIU-9 middlebuster attachment set for sinking middles. This attachment consists of two middlebuster beams with attaching parts. The middlebuster beam and the attaching parts have a series of holes which enables the operator to make a wide variety of adjustments depending on the height of bed desired. Two 22-B 10-inch bottoms are necessary. Orders should specify by number the bottom desired. A right and a left-hand gauge wheel should be used with this equipment. They are listed as special equipment.



Illust. 4—(Louisiana Equipment) The A-6 bedder with the CIU-10 cultivating attachment. The attachment consists of two gangs, each carrying three 18-inch cut-away disks with $6\frac{1}{2}$ -inch spacing. The gangs are reversible as well as fully adjustable for height, tilt, and angle of cut. This unit is ideally suited to cultivating and maintaining beds in the heavy river bottom land in the Louisiana area. With the addition of Farmall Touch-Control, this unit as well as the other bedder attachments will do a better job and be easier to handle than ever before.



A-6 Bedder and Cultivator

Rear-Mounted (Continued)

Ground Tools

Ground working tools are available in separate units which enable the operator to select the tools for his individual requirements. Two types of tool equipment are available; one meets the requirements for Florida, the other for Louisiana.

Regular Equipment

A-6 bedder only (consists of a 2-inch square tool bar with draft beams, attaching plates and lift links.)

Special Equipment

Florida:

511 931 R91 spring-trip middlebuster (less bottom) equipment: one attachment for busting ridges; two attachments for running middles. Order should specify quantity desired.

CIU-8 disk cultivating equipment, consisting of two gangs, each carrying one 16-in. and one 20-in. plain disk with 6½-in. spacing.

Louisiana:

CIU-9 middlebuster equipment (less bottom): one attachment for busting ridges, two for running middles. Order should specify quantity desired. One 22-B 22-in. bottom is required for busting ridges. Two 22-B 10-in. bottoms are required for running middles. Order should specify bottoms required.

CIU-10 disk cultivating attachment: consists of two gangs, each carrying three 18-in. cut-away disks with 6½-in. spacing.

Colters and Gauge Wheels:

PORC-203 rolling colter, 16-in., plain blade.

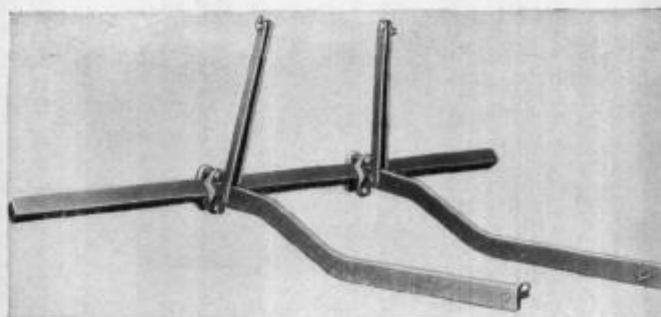
PORC-204 rolling colter, 16-in., notched blade.

POGW-113 gauge wheel, left-hand.

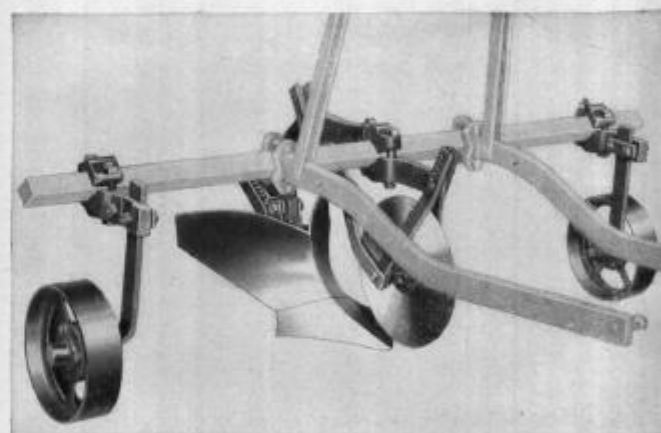
POGW-114 gauge wheel, right-hand.

Specifications

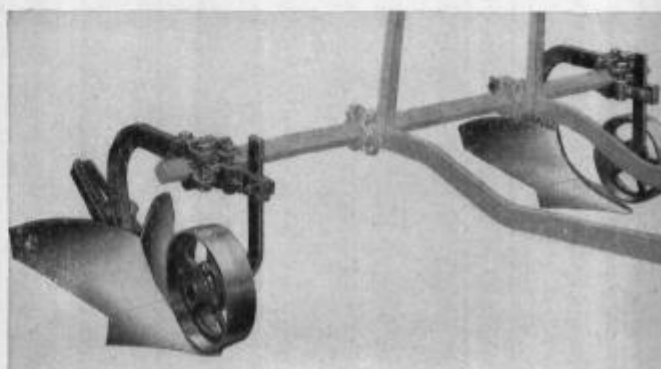
Bedder No.	Universal Unit Required	Attachments	Net Weight (Approx.)
A-6 Regular	Universal Rockshaft		295 lb.
A-6 with		(1) Spring-trip middlebuster	360 lb.
A-6 with		(2) Spring-trip middlebusters	420 lb.
A-6 with		CIU-8 Disk cultivating equipment	
A-6 with		(1) CIU-9 Middlebuster equipment	380 lb.
A-6 with		(2) CIU-9 Middlebuster equipment	470 lb.
A-6 with		CIU-10 Disk cultivating equipment	515 lb.
		PORC-203 Rolling colter 16-in. plain blade	45 lb.
		PORC-204 Rolling colter 16-in. notched blade	40 lb.
		POGW-113 Gauge wheel left-hand	25 lb.
		POGW-114 Gauge wheel right-hand	25 lb.



Illust. 1 — The regular A-6 bedder unit is a simple tool bar which attaches to the Mounting Pads on the tractor rear housing by means of draft beams and attaching plates. All ground working tools are furnished as special equipment and ordered by number in each case.



Illust. 2 — (Florida equipment) The A-6 bedder with a single middlebuster unit. It is set for busting ridges or throwing up beds. The middlebusting unit consists of a stub beam with No. 20 spring trip to which any steel frog middlebuster bottom with heel bolt may be attached. The spring trip protects the buster when operating in root-infested soils. Gauge wheels and a 16-inch plain, or notched, rolling colter are supplied as special equipment when ordered. Bottoms desired (equipped with heel bolt) must be ordered in addition.



Illust. 3 — (Florida equipment) The A-6 bedder equipped with 2 stub beams with No. 20 spring trips to which any steel frog middlebuster bottom with heel bolts may be attached. This unit is set for running middles and is adjustable for 38, 40, and 42-inch rows. Bottoms desired should be ordered.



INTERNATIONAL HARVESTER

146-D

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HM-4 Bedder and Cultivator

(For Farmalls H, M and MD)



Illust. 1—HM-4 bedder and cultivator with disks set for cultivating two rows.

The HM-4 is a two-row bedder for use with Farmalls H, M and MD. The machine consists of a tool bar with lifting rockshaft and four disk gangs. Each gang carries one 16-in. and one 20-in. plain disk spaced $6\frac{1}{2}$ -in. apart. The disk gangs are readily adjustable for a wide variety of settings for use in throwing up beds, cultivating, splitting back ridges, etc. The tool bar is 2-in. square and is 90 in. long.

The machine is operated with hydraulic Lift-All. Convenient levers assist in leveling the tool bar when working in uneven ground.

Middlebuster Attachment

By removing the disk gangs the HM-4 can readily be converted to a middlebuster carrying 1, 2 or 3 bottoms, and spaced 38, 40 or 42 inches apart. Colters and gauge wheels for use with the middlebusters can also be supplied.

Regular Equipment

Tool bar and lifting rockshaft (two cylinders required). Four disk gang units with one 16 and one 20-in. disk per gang.

Special Equipment

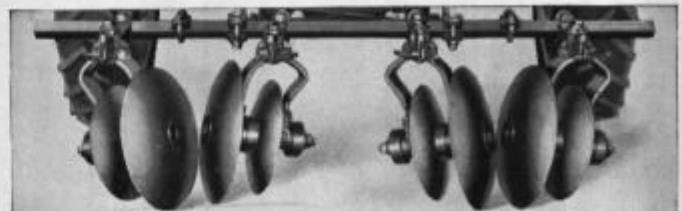
Disk gangs with 18 and 20-in. disks. Middlebuster attachment (bottom as ordered)—one attachment per row. Plain or notched rolling colter. Gauge wheels (pair).

Specifications

No.	Description	Net Weight (Approx.)
HM-4	Bedder and Cultivator with 4 disk gangs..	750 lb.
.....	Middlebuster attachment, less bottom,	
.....	per row.....	74 lb.
.....	Gauge wheel attachment, pair.....	104 lb.
.....	16-in. rolling colter.....	46 lb.



Illust. 2—Disks set for building up beds; or for reversing beds after they have been torn down.



Illust. 3—Disks set to tear down old beds.



Illust. 4—HM-4 bedder and cultivator with two middlebuster attachments, rolling colters and gauge wheels.

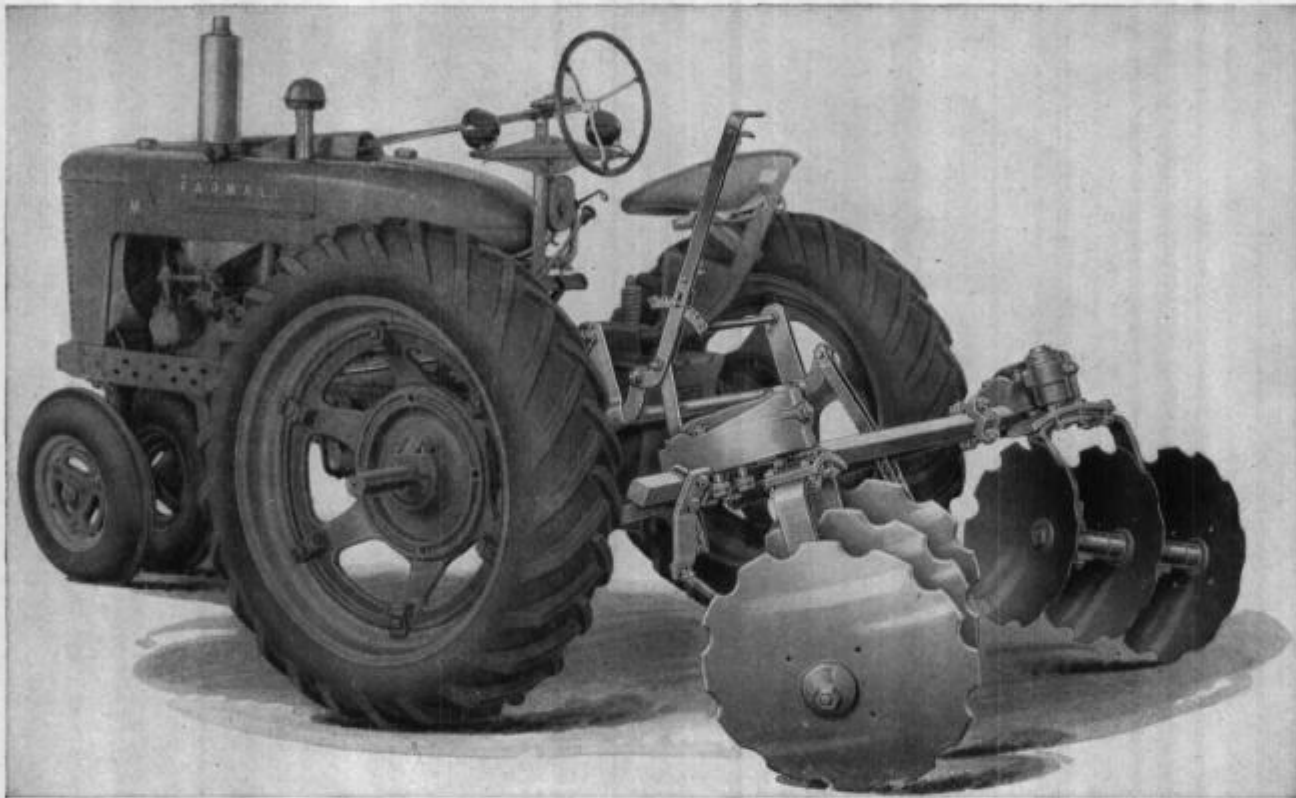


INTERNATIONAL HARVESTER



M-3 Bedder and Cultivator

(For Farmalls M and MD)



Illust. 1—The M-3 bedder for Farmalls M and MD is regularly equipped for use with hydraulic Lift-All.

The M-3 is a heavy-duty tool bar bedder, designed to throw up large beds for growing two or more rows of vegetables on each bed. Each of the two gangs has three notched disks in 22, 24 and 26-inch sizes spaced at $10\frac{3}{4}$ inches. Heavy brackets and yokes permit setting the gangs at any required tilt or angle and for various widths of beds. The tool bar is 90 in. long and made of 2-in. square stock.

The gangs are carried on a heavy, square steel tool bar controlled by hydraulic Lift-All. A hand lever is

provided on the rockshaft to permit leveling the tool bar to maintain uniform beds.

Special Equipment

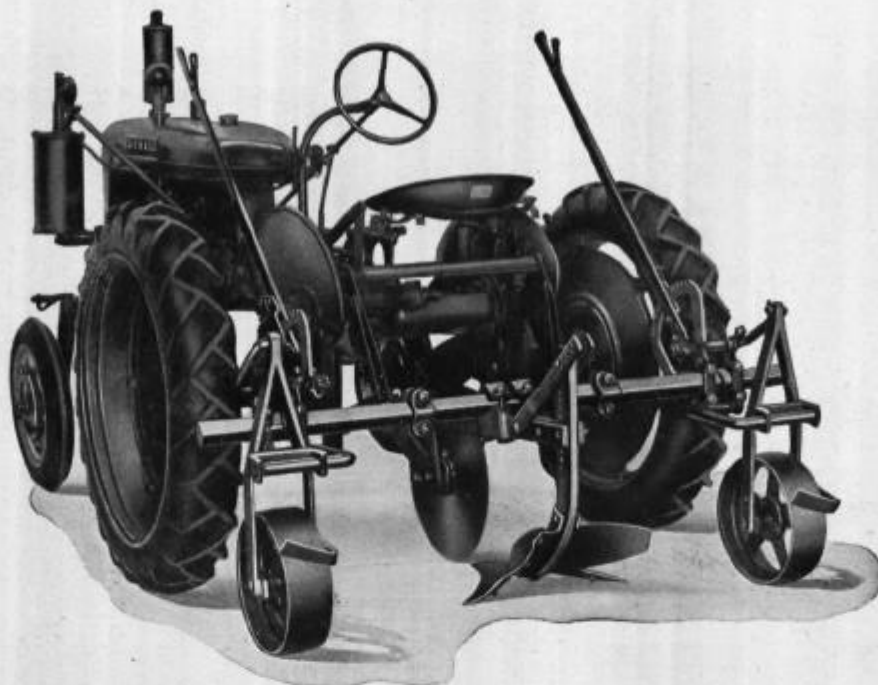
Knife-type bed leveling attachment.

Specifications

No.	Description	Net Weight (Approx.)
M-3	Bedder and Cultivator.....	819 lb.
	Bed leveling attachment.....	32 lb.



AV-1 Cane Tools



Illust. 1 — AV-1 tools for capping. Individual units shown are CIU-1 basic tool bar unit, CIU-2 capper attachment and CIU-4 gauge wheel attachment.

- Low-cost, 1-row equipment for small acreages.
- Tool bar design—wide variety of interchangeable equipment.

The AV-1 cane tools comprise a common tool bar frame with lifting rockshaft for operation with pneumatic Lift-All and a variety of individual and fully interchangeable "CIU" units to meet varying requirements. These tools and the Farmall-AV, which has ample power to haul a cane cart and Culti-Vision for

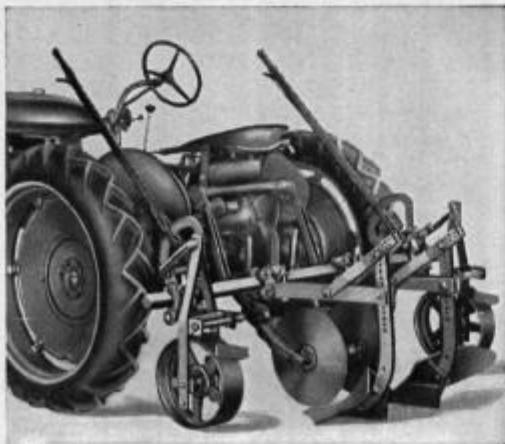
operating a forward-mounted cultivator, make possible an efficient, low-cost combination, for fast, accurate work throughout the season.

Equipment

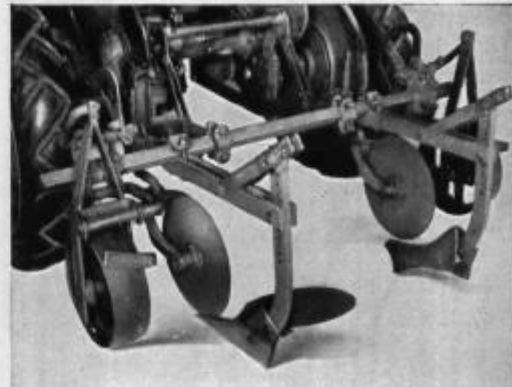
CIU-1 basic tool bar unit including tool bar, rockshaft and parts for using with pneumatic Lift-All.

Individual tool units, as ordered (see Specifications).

(See next page for Specifications.)



Illust. 2 (left) — Barring off with side plows. Units shown with the CIU-1 tool bar are the CIU-3 barring-off attachment (two side plows and two colters) and the CIU-4 gauge wheel attachment.

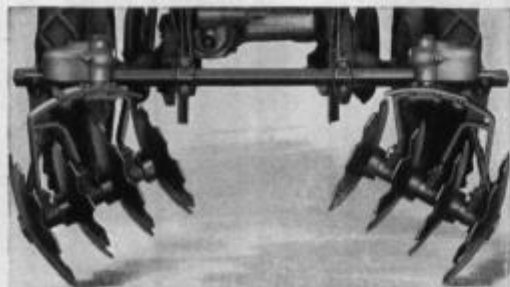


Illust. 3 — AV-1 tools set for dirting back. Same equipment as in Illust. 2.

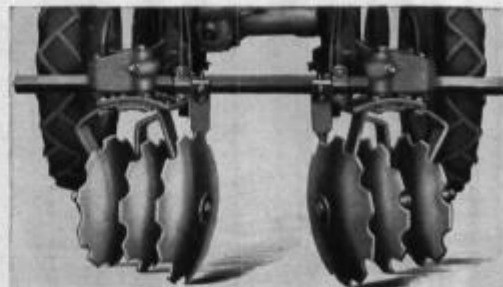


AV-1 Cane Tools

(Continued)



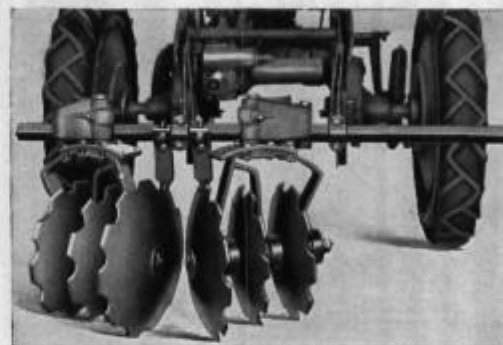
Illust. 1 — This shows the CIU-5 unit with gangs set for cultivating. Note heavy brackets which permit setting disks to any desired tilt.



Illust. 2 — CIU-5 unit set for barring off.



Illust. 3 — CIU-5 unit set for boxing middles. The off-center position enables the tractor wheels to ride on firm ground next to the beds.



Illust. 4 — Dirtying back the middles.

Specifications

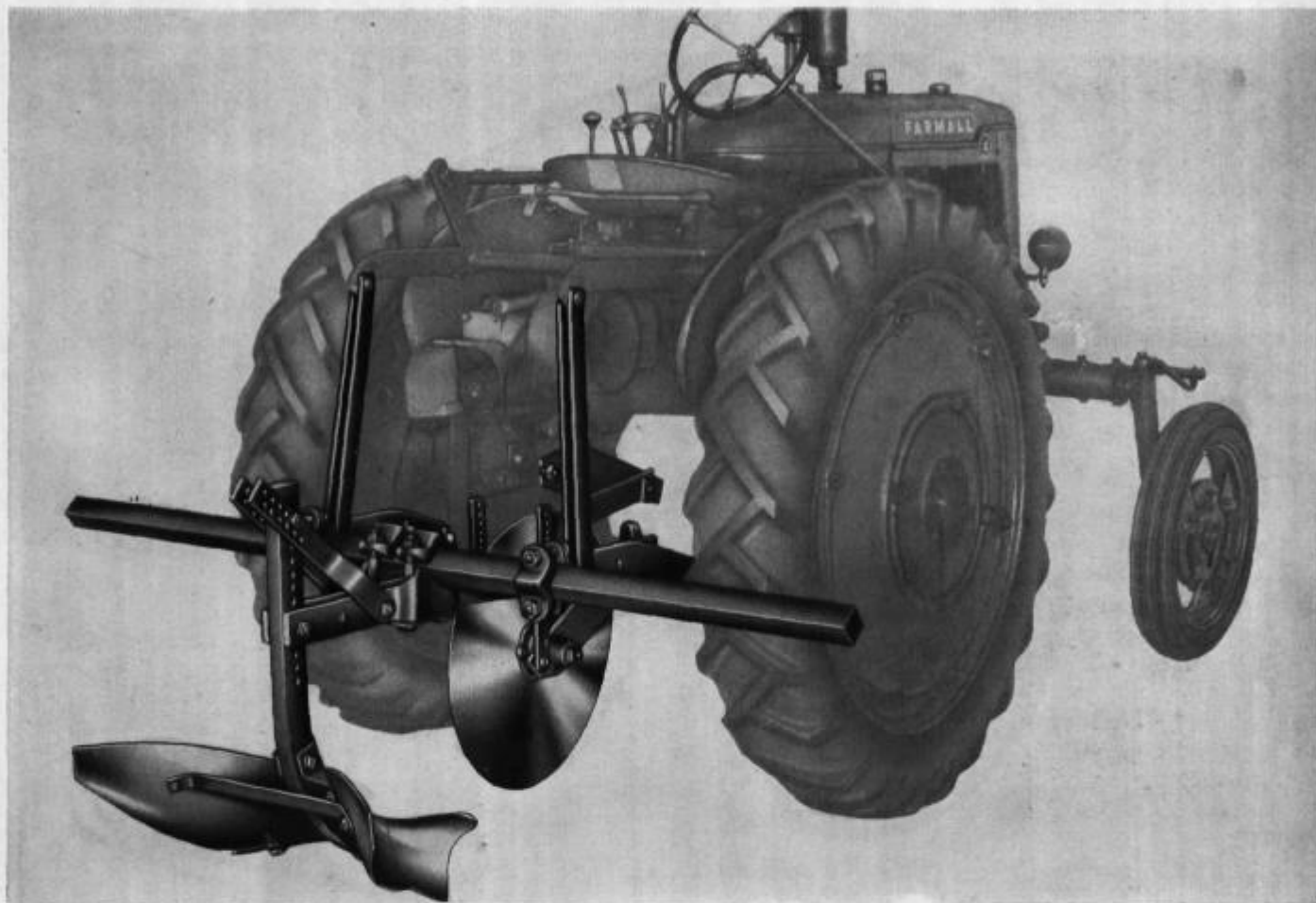
No.	Description	Net Weight (Approx.)
CIU-1	Basic Tool Bar Unit (tool bar, rockshaft and parts for using pneumatic Lift-All).....	297 lb.
CIU-2	Capper Unit (one 22-in. middlebuster bottom and one 22-in. plain rolling colter).....	202 lb.
CIU-3	Barring-Off Unit (one right-hand and one left-hand 7-in. bottom and two 18-in. plain rolling colters).....	287 lb.
CIU-4	Gauge Wheel Attachment (right-hand and left-hand gauge wheels, brackets and levers), for use with CIU-2 and CIU-3 units.....	249 lb.
CIU-5	Disk Cultivator and Chopper Unit (two gangs with one 22-in. and three 20-in. notched disks per gang).....	441 lb.
CIU-10	Disk Cultivator and Chopper Unit (two gangs with three 18-in. notched disks per gang).....	218 lb.
CIU-29	Two-Row Middlebuster Unit (two 22-in. middlebuster bottoms and gauge wheels).....	364 lb.
CIU-30	Rolling Colter Attachment (standard only), for use with CIU-29 unit when used with AV-136 cultivator, two required.....	67 lb.
CIU-31	Rolling Colter Attachment (standard only), for use with CIU-29 unit when used with AV-138 cultivator, two required.....	67 lb.
CIU-167	Rolling Colter for CIU-30 or CIU-31 attachments, two required.....	31 lb.
CIU-23	Special Power Lift Parts, for using AV-136 or AV-138 cultivator with AV-1 tools.....	5 lb.



Farmall Super-A

AV-2 Cane Tools

One-Row, Rear-Mounted



Illust. 1—The AV-2 cane tool bar with CIU-2 capper attachment.

Above is shown the AV-2 cane tool bar with lifting means, draft beams and attaching plates (regularly furnished) in conjunction with the CIU-2 capper attachment, which consists of a frame carrying one 20-B-22-inch middlebuster bottom with 22-inch moldboards and a 22-inch plain blade rolling colter. This capper attachment serves two purposes. Used with the 22-inch plain rolling colter, it makes an excellent cane plow for knocking off the cap in the first operation of reversing the beds. The 22-inch moldboards, regular on this

middlebuster bottom, throw the soil well away from the top of the ridge. Ten-inch moldboards are also available for the 22-B-22-inch bottom. This buster bottom and moldboard combination may be used for slicing off the dry cane stubble in preparation for the new growth. The CIU-4 gauge wheel attachment should be ordered for use with this equipment. It is shown in Illust. 2 page 150-C in conjunction with the CIU-3 barring-off attachment.

Specifications

- Simple, one-row cane tools.
- For the entire crop cycle.
- For small acreages.
- As an auxiliary unit on larger acreages.
- Easy to operate.
- Quick-change.
- Farmall Touch-Control for effortless raising and lowering.
- Tool bar has no side motion but can float freely vertically.

Regular Equipment	Universal Units Required	Special Equipment	Net Weight (Approx.)
AV-2 Tool Bar.....	Universal Rockshaft.....	CIU-2	290 lb.
.....	Capper Attachment	200 lb.
.....	CIU-3 Barring-off Attachment	285 lb.
.....	CIU-4	
.....	Lever and Gauge Wheel Attachment	250 lb.
.....	514 628 R91 Disk Gang Attachment.	440 lb.
.....	CIU-29 Middlebuster Attachment.....	365 lb.



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Farmall Super-AV AV-2 Cane Tools

One-Row, Rear-Mounted (Continued)



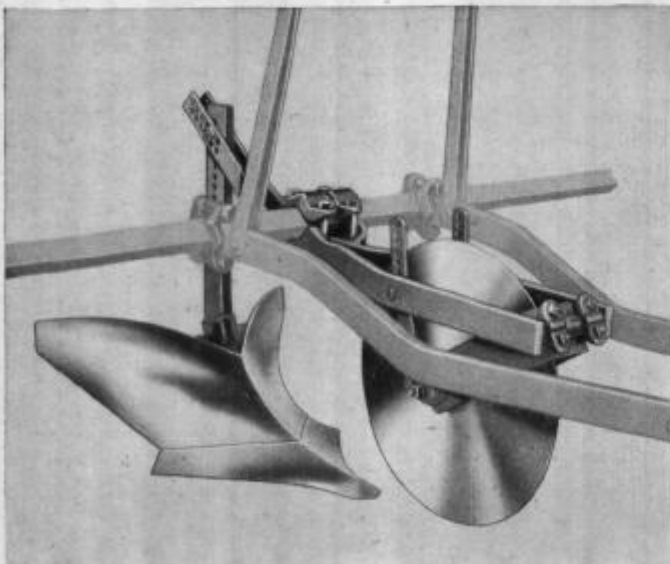
Versatile Cane Equipment

The AV-2 cane tool line which consists of a 2-inch square tool bar 78 inches long with the necessary draft beams and attaching plates (regular equipment), and a complement of ground working tools (special equipment), enables the cane grower to select tools for his soil condition and local planting practices. This complement of ground tools is designed to accommodate every operation throughout the entire cane crop cycle from reversing the bed, through trenching, wrapping, cultivating, and capping, to the barring-off operation.

The AV-2 cane tool bar rear-mounts quickly and easily, by means of draft beams and attaching plates, on Tractor Mounting Pads which are positioned on the rear housing of the Farmall Super-AV tractor. This tractor and implement combination forms an easy-to-operate, highly efficient unit that is ideally suited to the needs of the small acreage cane grower. It is equally efficient when used as an auxiliary unit on larger acreages.

Universal Rockshaft

AV-2 cane tool equipment requires one Universal (rigid) Rockshaft for raising and lowering.



Illust. 1 — The CIU-2 capper attachment removed from the tractor. There is wide variation in the possibilities for adjustment not only in the stub beam and carrying frame but also in the rolling colter. These adjustments make possible almost any angle or depth adjustment.

Free-floating Tool Bar

Side motion of the draft beams is reduced to a minimum while permitting them to move freely in a vertical direction. This feature assures that the tool bar and the ground equipment attached thereto are free to float.

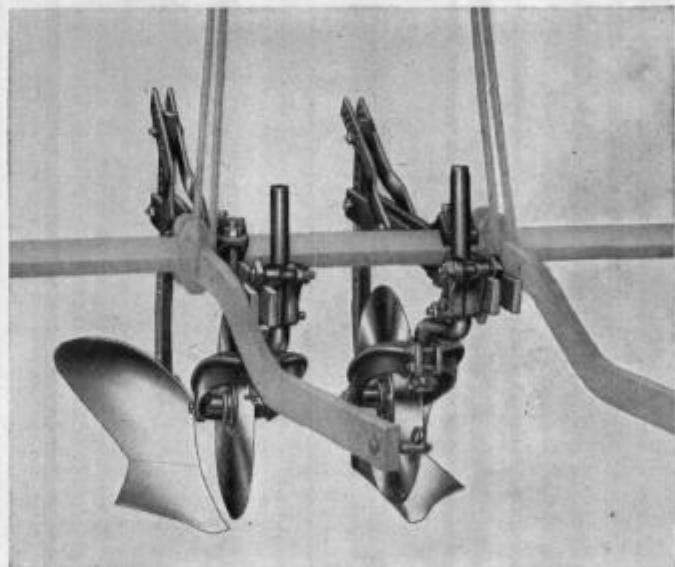
Regular Equipment

Tool bar, lifting means, draft beams and attaching plates.

Special Equipment

CIU-2 capper attachment. CIU-3 barring-off attachment.

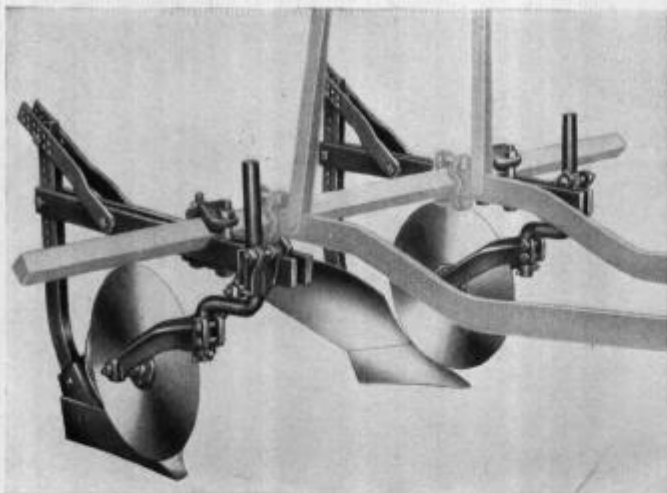
CIU-4 lever and gauge wheel attachment. 514 628 R91 disk gang attachment. CIU-29 middlebuster attachment.



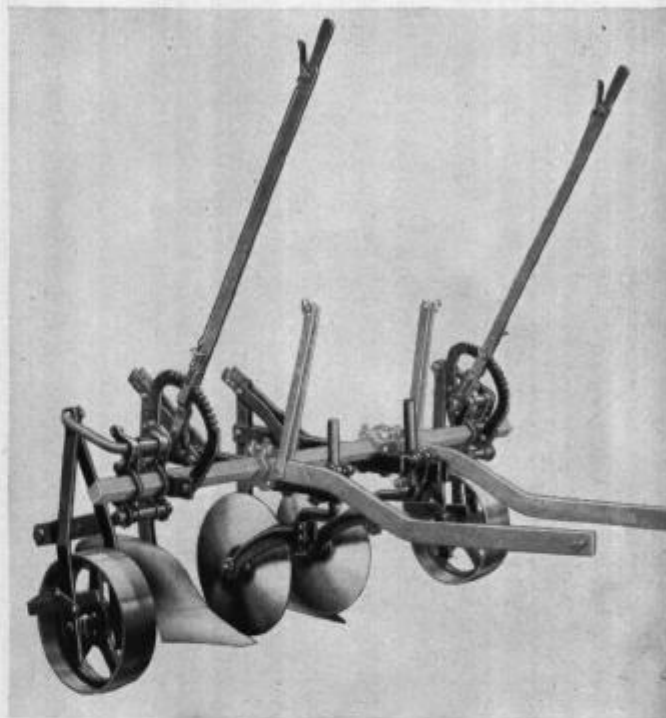
Illust. 2 — The CIU-3 barring-off attachment, which consists of one 7-inch right-hand bottom and one 7-inch left-hand bottom with two plain 18-inch rolling colters and the necessary attaching frames, is shown here removed from the Farmall Super-AV tractor. This attachment serves two purposes. (1) It may be used in the second operation of reversing the beds which constitutes slicing off the sides of the beds after the CIU-2 capper attachment has knocked off the top. These right and left-hand moldboards do an excellent job of throwing the dirt into the old middles preparatory to building new beds. (2) This same attachment is also used for barring-off the sides of the beds after the CIU-2 capper attachment has sliced off the old stubble from the top of the bed at the start of the growing season. Slicing off the sides of the bed permits the sun to warm the dormant sugar cane roots and thus encourage the new cane shoots to faster growth. The CIU-4 lever and gauge wheel attachment should be ordered for use with this attachment.



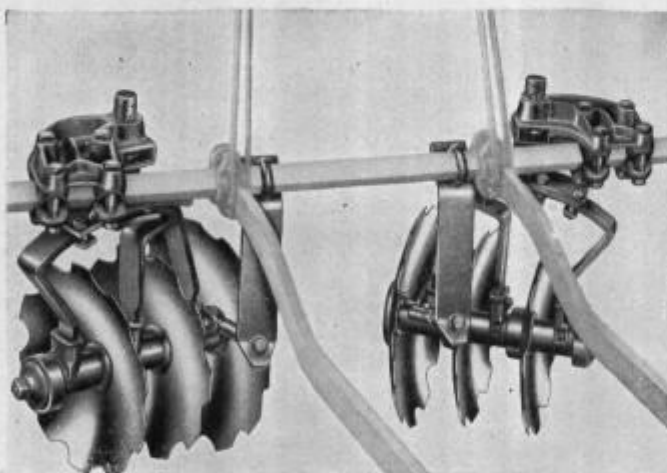
Farmall Super-AV
AV-2 Cane Tools
 One-Row, Rear-Mounted (Continued)



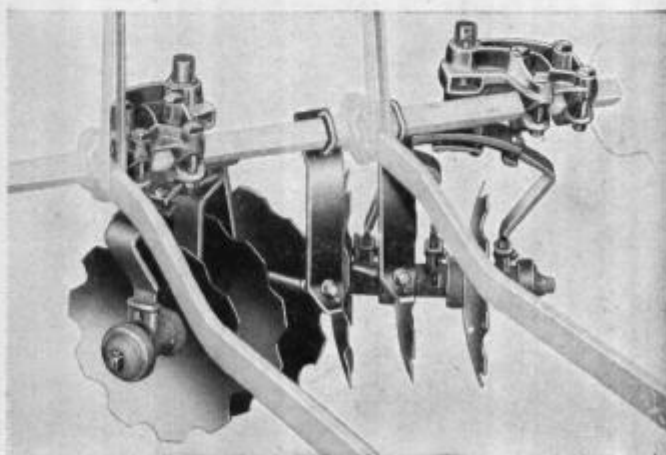
Illust. 1—The CIU-3 barring-off attachment set for the wrapping operation. This operation, with the moldboards throwing the dirt to the center, takes place after the bed has been reversed. The rolling colters are set to follow in the tire tracks left by the tractor. With the tractor straddling the bed, the moldboards throw the dirt up onto the bed. The CIU-4 lever and gauge wheel attachment should be used in conjunction with this unit.



Illust. 2—The CIU-4 lever and gauge wheel attachment, shown here in conjunction with the CIU-3 barring-off attachment, consists of two complete units, including adjusting levers and yoke-type gauge wheel mountings. It attaches to the tool bar by means of U-bolts. This gauge wheel attachment is also used with the CIU-2 capper attachment. It permits an accurate adjustment for almost any depth of cut. Example: When the CIU-2 capper attachment is used for slicing off the stubble preparatory to growing the new crop from last year's root system, it is necessary to run the gauge wheels in the middles while the buster bottom skims along just under the top of the ridge. The opposite of this is the use of the gauge wheel attachment in conjunction with the CIU-3 barring-off attachment to slice off the sides of the bed in the reversing operation. In this operation maximum cut is desirable.



Illust. 3—514 628 R91 disk gang attachment consists of two gangs, each carrying one 22-inch and three 20-inch notched disks with a 6½-inch spacing. These disk gangs are especially valuable in soil that is in a hardened and lumpy condition. Where moldboard type attachments have a tendency to throw the soil in large lumps, the use of disk-type attachment tends to break up the lumps. Also under extremely wet conditions the disk gangs will break up the soil and hasten the drying. The disk gang attachment is shown here set for the barring-off operation (note that the inside disk has been removed.) Set in this manner it may be used in one of two ways. (1) It may be used for the second operation in reversing the beds after the CIU-2 capper attachment has knocked off the top of the bed. (2) It also may be used in the regular barring-off operation after the CIU-2 capper attachment has sliced off the old cane stubble at the start of the growing season.

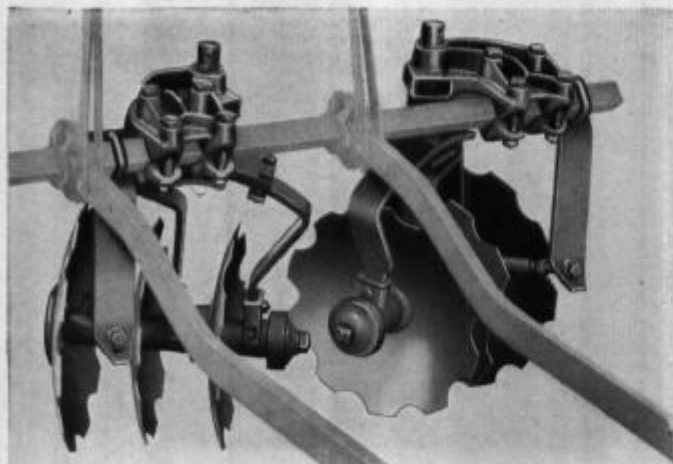


Illust. 4—The 514 628 R91 disk gang attachment set for "dirting back" the middles. This operation, which takes place after barring-off, pulverizing the lumps and throws the dirt back toward the sides of the bed.

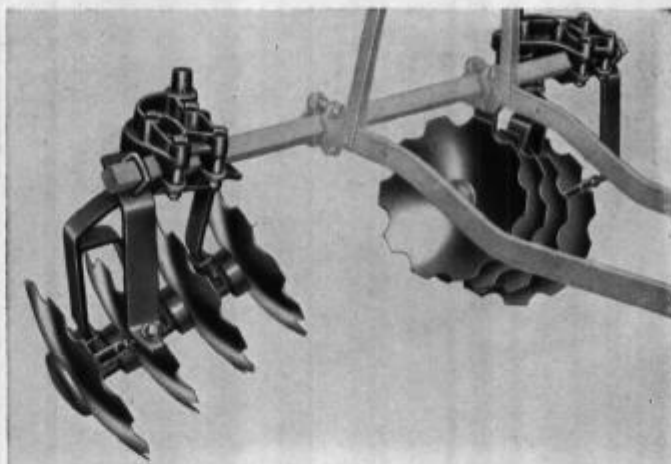


Farmall Super-A and AV AV-2 Cane Tools

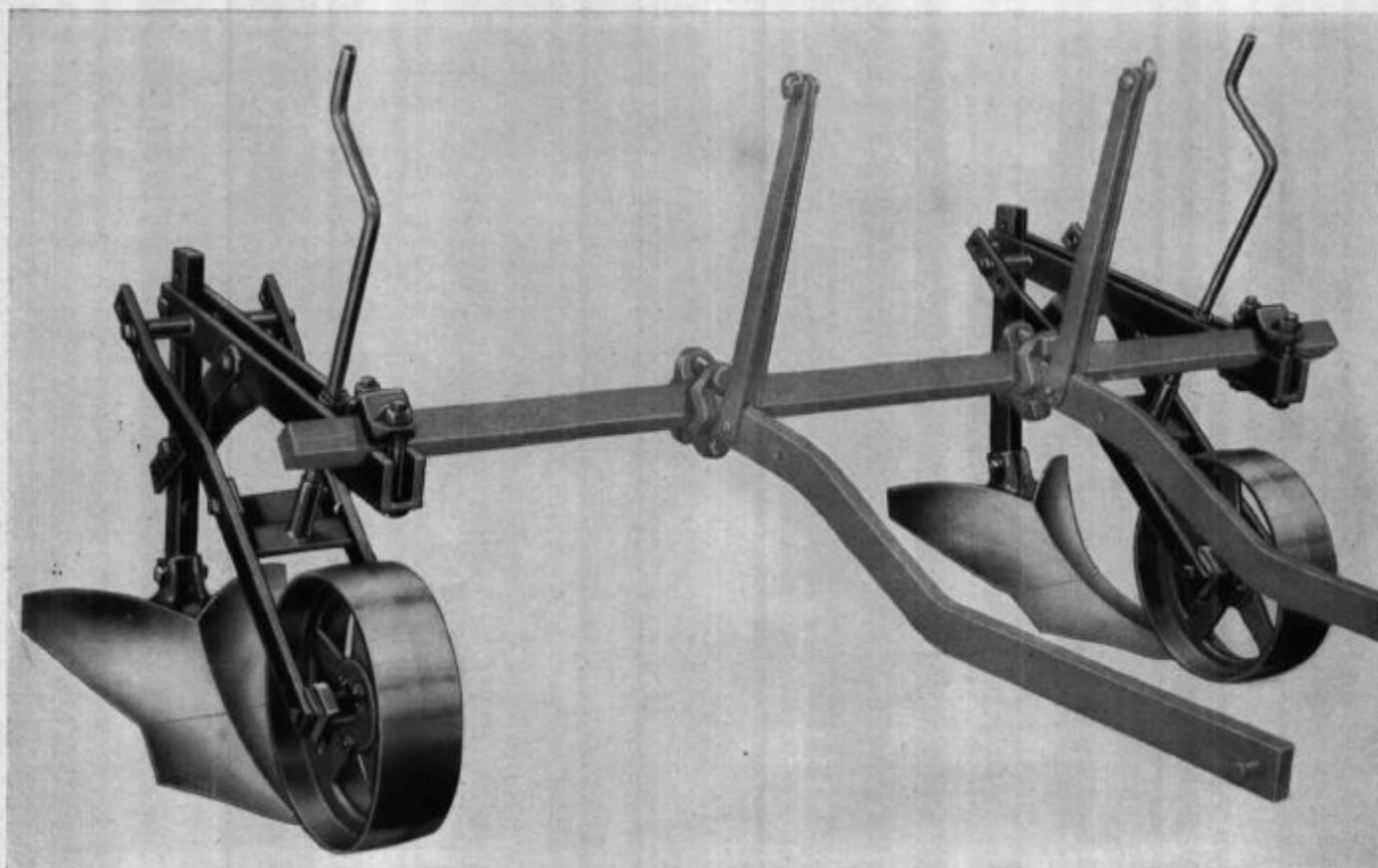
One-Row, Rear-Mounted (Continued)



Illust. 1—The 514 628 R91 disk gang attachment set for boxing the middles. Note that the disk gangs are off-set to the left which permits the tractor to operate in the middles. This attachment is used for the final shaping of the bed. The soil is sliced from the lower sides of the bed and leveled.



Illust. 2—The 514 628 R91 disk gang attachment with all four disks in place. It is set for the cultivating operation. The gangs pick up the soil from the dirting back operation, break it up into smaller pieces and move it to the top of the bed.



Illust. 3—The CIU-29 middlebuster attachment consists of two 22-B-10-inch middlebuster bottoms and is used primarily for running middles. The bottoms are mounted on $2\frac{1}{2} \times 1\frac{1}{4}$ -inch steel standards which have a wide range of vertical adjustments and can also be tilted out of the vertical position. One gauge wheel is provided for each bottom. The depth is regulated by adjusting cranks which extend down to each gauge wheel. The gauge wheel runs directly ahead of the bottom.

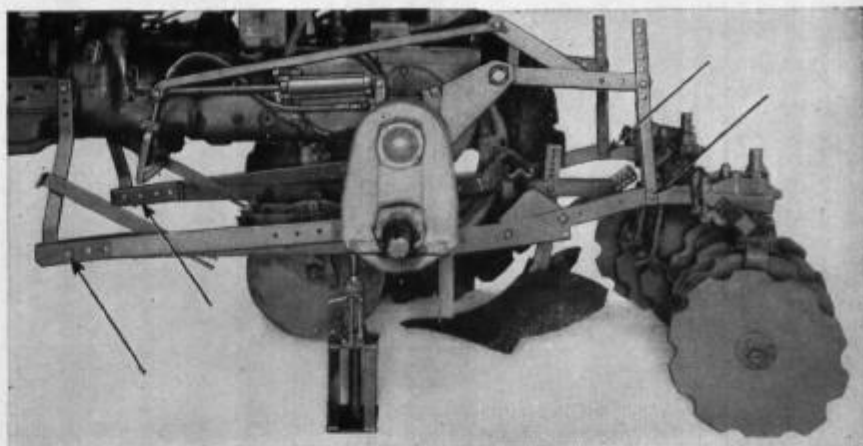


HMV-1 Cane Tools

(For Farmalls HV, MV and MDV)

- Unit design—fully interchangeable
- Quick-attachable throughout

➔
Illust. 1, right — Shaded parts in this view show the CIU-11 basic mounting chassis. Arrows indicate the four points at which the various HMV-1 cane tools are attached. Equipment mounted on the chassis includes CIU-12, CIU-15 and CIU-13 units set for the first bed reversing operation. (Left tractor drive wheel removed.)



HMV-1 cane tools for the high-clearance Farmalls HV, MV and MDV comprise a series of convenient tool units which are readily interchangeable on a common frame, or mounting unit. Each of the main tool units comes complete with its own draft beams and support stands. To remove a unit from the mounting frame the operator needs only to lower the support stands, disconnect the hitch pins and lift straps, and drive off with the tractor. The support stands hold the unit in the proper position, ready for the next time it is to be used.

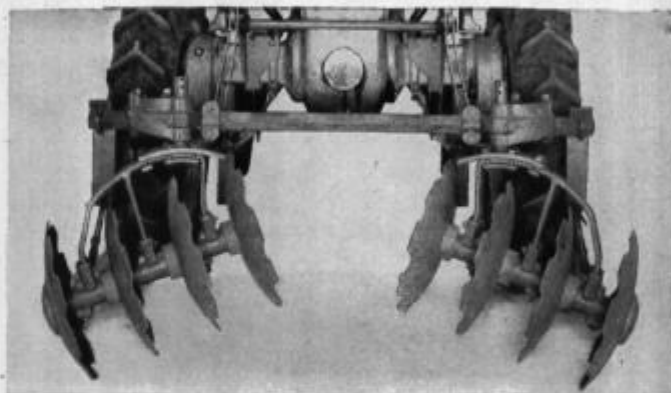
Each of the units is listed separately, thereby enabling the purchaser to select equipment according to his particular requirements.

Mounting unit. Basic equipment for the various cane tool units is the CIU-11 cane tool mounting chassis, which attaches directly to the tractor. It consists of a rockshaft and lift straps, attaching parts for the draft beams of the tool units, and power lift connections. Two 3-in. Lift-All cylinders are required to operate the equipment; these are supplied as tractor equipment when ordered.

One-Row Equipment

There are two main units for one-row operation with Farmalls HV, MV and MDV. They are the CIU-12 chopper and cultivator unit with CIU-15 disk gangs, and the CIU-16 plow equipment unit. Two auxiliary units for use in conjunction with these main units are the CIU-13 capper and the CIU-14 22-in. rolling colter.

The one-row chopper and cultivator unit has a 78-in. tool bar. The gangs are freely adjustable for chopping, cultivating, bed reversing, etc.



Illust. 2 — One-row disk equipment set for cultivating.

The one-row plow unit has a 44-in. tool bar, two 10-in. side plows and one 14-in. middlebuster, two 18-in. rolling colters, and two gauge wheels. It can be used for a variety of operations. When used without additional equipment the unit is designed for performing the second bed reversing operation; addition of the 22-in. rolling colter is recommended for trashy conditions. Removing the middlebuster and beam adapts the unit for first and second barring off. When the capper and 22-inch colter are added the unit can be used for capping and, under suitable conditions, for first bed reversing.

Tandem cultivator. The CIU-25 tandem attachment, for use only with Farmalls and MDV, mounts at the rear of the one-row chopper and cultivator. It has two disk gangs, each carrying five 18-in. notched disks spaced at $6\frac{1}{2}$ inches. It is designed for double cultivation, for raising or finishing beds, and, under suitable conditions, for tearing down beds.

When desired, the chopper with tandem can also be reset for use as a bog-type harrow.



HMV-1 Cane Tools

(Continued)

Two-Row Cultivator

The CIU-19 two-row cultivating unit may be used with Farmalls HV, MV or MDV. Like the one-row chopper and cultivator, this unit has its own draft beams and support stands for quick attachment to the basic mounting unit. It has a 118-inch tool bar carrying a pair of disk gangs and a 10-inch middlebuster on each side. The two sections are free to move from side to side

when working in irregular rows. Parallel draft bars hold the tools square to the row and a stabilizer bar keeps them level. Each disk gang has three 18-inch plain disks spaced at 6½ inches.

The CIU-27 guide lever attachment has a seat and levers to control the cultivator sections in relation to the rows. It is especially valuable in early operations when the ridges are not clearly marked.

The CIU-24 magnolia attachment consists of two

Specifications

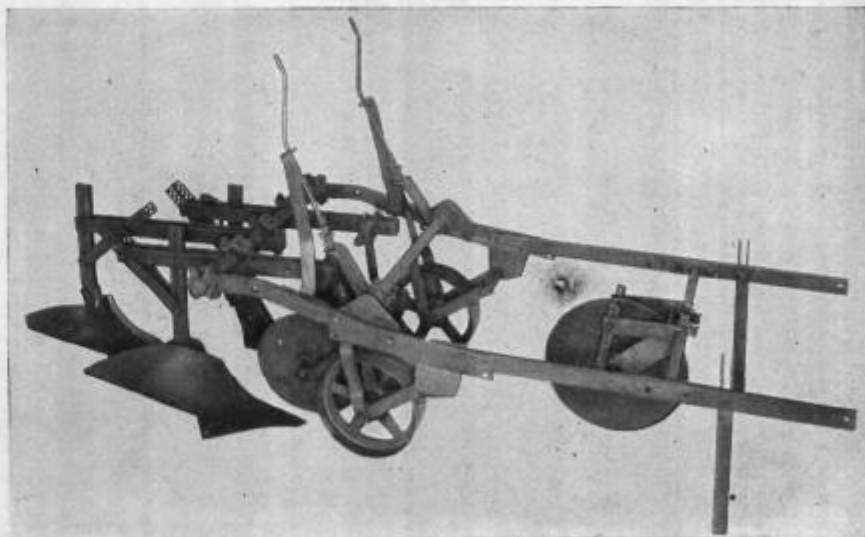
No.	Description	Net Weight (Approx.)
CIU-11	Basic Mounting Chassis (for use with all HMV-1 units).....	340 lb.
ONE-ROW DISK EQUIPMENT		
CIU-12	One-Row Chopper and Cultivator Unit (draft beams with support stand, and 78-in. tool bar, <i>less</i> CIU-15 disk gangs).....	254 lb.
CIU-15	One-Row Chopper Disk Gangs (right and left-hand gangs, each with one 22-in. and three 20-in. notched disks), required for use with CIU-12 unit.....	590 lb.
CIU-25	One-Row Tandem Cultivator Attachment (two disk gangs with five 18-in. notched disks on each gang), for use with CIU-12 unit. <i>For Farmalls MV and MDV only</i>	844 lb.
ONE-ROW PLOW EQUIPMENT		
CIU-16	One-Row Plow Unit (draft beams with support stand; CIU-17 10-in. side plows, beams, tool bar and 18-in. rolling colters; and CIU-18 18-in. middlebuster and beam).....	892 lb.
CAPPER AND COLTER FOR CIU-12 AND CIU-16		
CIU-13	Capper Attachment (20-in. middlebuster bottom, beam and auxiliary tool bar), for use with CIU-12 and CIU-16 units.....	152 lb.
CIU-14	Rolling Colter Attachment (22-in. rolling colter and frame), for use with CIU-12 and CIU-16 units.....	79 lb.
TWO-ROW CULTIVATING AND WRAPPING EQUIPMENT		
CIU-19	Two-Row Cultivator Unit (draft beams with support stand; 118-in. tool bar and stabilizer; pull links and tool bars; two disk gangs per row with three 18-in. plain disks per gang; gauge wheels; two 10-in. middlebuster bottoms with beams).....	892 lb.
CIU-27	Guide Lever Attachment (levers and seat), for use with CIU-19 unit.....	76 lb.
CIU-24	Magnolia Attachment (one PO 3301 B right-hand and one PO 33028 B left-hand shovel with shank, standard and clamp per row), for use with CIU-19 unit.....	108 lb.
CIU-163	Two-Row Wrapping Attachment (one right-hand and one left-hand 7-in. bottom and two 18-in. plain rolling colters per row), for use with CIU-19 unit.....	553 lb.
FERTILIZER EQUIPMENT		
HMV-50-C	Fertilizer Attachment (one hopper and two spouts per row, complete with seedplate drive, controls and frame) ..	286 lb.
OTHER ATTACHMENTS		
CIU-21	Front-End Weight for Farmall-HV.....	238 lb.
CIU-26	Front-End Weight for Farmalls MV and MDV.....	238 lb.
CIU-22	Tractor Fender Bracket.....	13 lb.



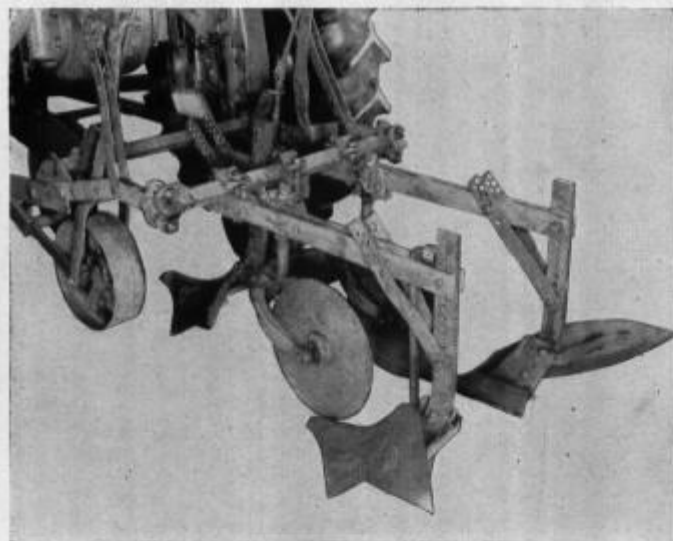
HMV-1 Cane Tools

(Continued)

Illust. 1 (right) — The CIU-16 one-row plow equipment as it appears when detached from tractor. Support stands make it easy to attach the draft beams to the mounting unit on the tractor. This view shows the ground tools set for the record bed reversing. The CIU-14 colter shown here is recommended for use under trashy conditions.



Illust. 2 (below) — Capping and barring off. This shows the CIU-16 unit less middle-buster together with CIU-13 capper and CIU-14 colter units. Under suitable conditions this combination can also be used for first bed reversing.

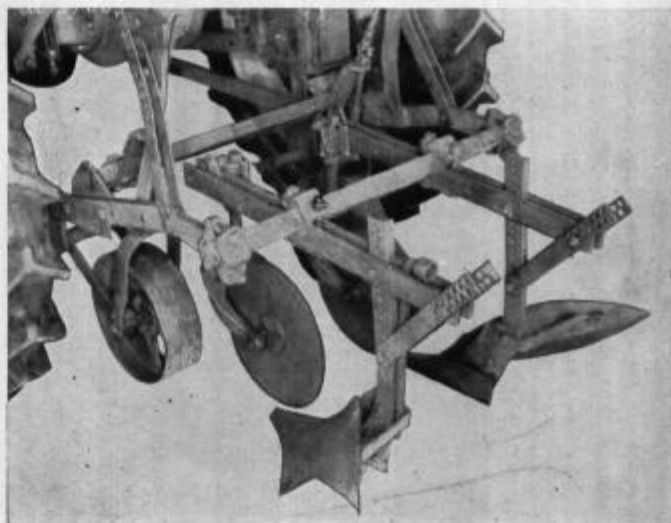


standards, each with a moldboard hiller. It is used for cultivating the sides of ridges under conditions where disks are unsuitable.

The CIU-163 wrapping attachment, for use with Farmalls MV and MDV only, adapts the CIU-19 unit for two-row operations with side plows.

Fertilizer Attachment

The HMV-50 fertilizer attachment for side dressing is designed for use either with the CIU-12 one-row chopper and cultivator or with the CIU-19 two-row cultivator.



Illust. 3 — Barring off with the CIU-16 plow unit. The middle-buster supplied with the unit is removed for this operation.

The hoppers hold about 150 lb. of fertilizer and are mounted well forward on the tractor. They are of star feed type with two feed wheels, each with its own discharge opening. The fertilizer tubes direct the flow of fertilizer to each side of the cane row ahead of the disk cultivating units. A manual throw-out mechanism for starting and stopping the flow of fertilizer is located on the tractor steering post; there are two levers, which may be operated separately for each hopper or together, as desired.

Equipment

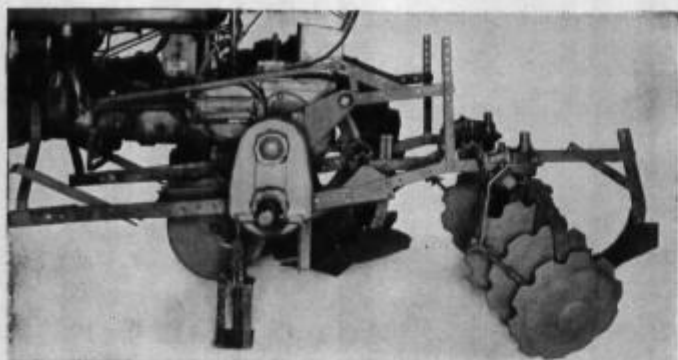
CIU-11 basic mounting chassis and individual units and attachments, as shown in Specifications.



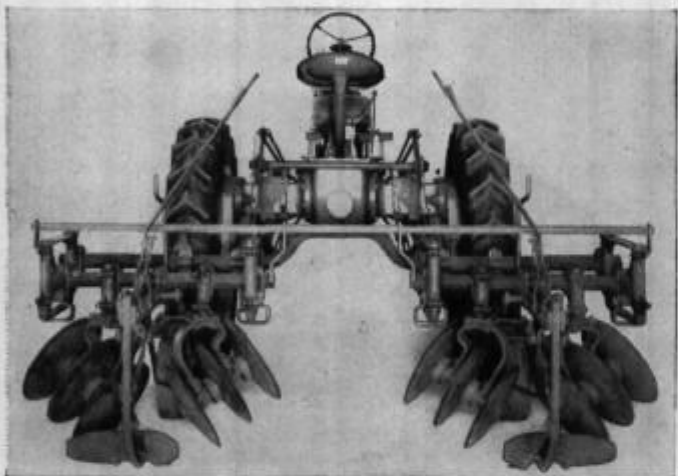
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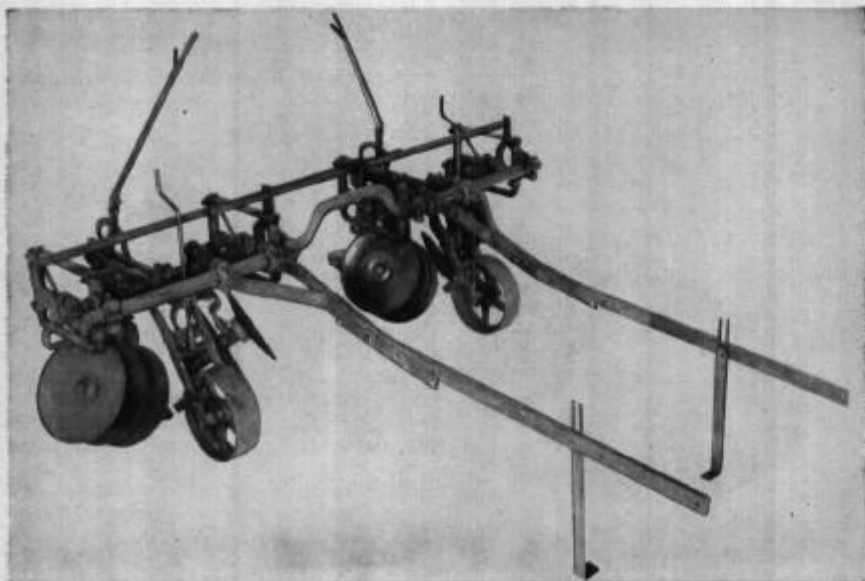
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Illust. 1—Preparing a bed for planting cane. Tool units for this operation include the CIU-12 chopper and cultivator unit together with CIU-15 disk gangs, the CIU-13 capper and CIU-14 colter, and the middlebuster, beam and standard from the CIU-16 plow unit.



Illust. 4—The CIU-19 cultivator unit provides ample clearance. Convenient levers regulate the angle of cut of the disk gangs to throw more or less dirt to the cane.



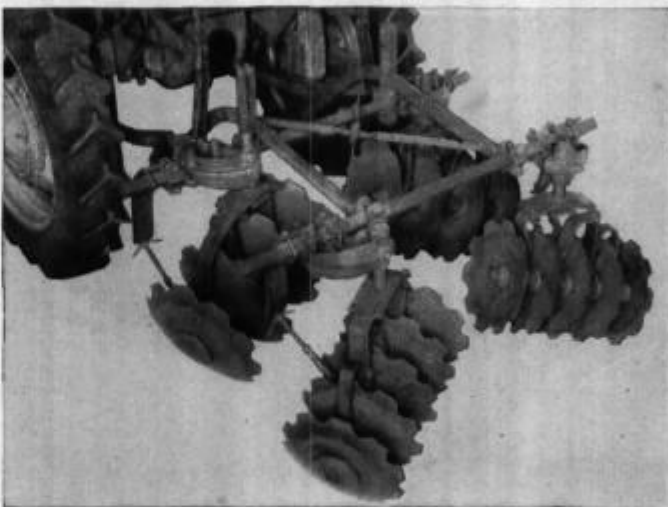
Illust. 6—Detached view of the CIU-19 two-row cultivator unit. Gauge wheels adjusted by screw cranks, control the depth of each section.



Illust. 2—The CIU-13 cap-drawn unit available for attachment to the draft beams of either the CIU-12 chopper and cultivator unit or the CIU-16 plow unit.



Illust. 3—The CIU-14 rolling colter unit has a 22-in. blade. Like the CIU-13 capper, it has its own tool bar for quick-attachment to draft beams of either CIU-12 or CIU-16 unit.



Illust. 5—The CIU-25 tandem cultivator unit for use in combination with the one-row chopper on Farmalls MD and MDV. This view shows equipment set for finishing beds.



Illust. 7—The CIU-27 guide lever attachment for use with the CIU-19 two-row cultivator. It is mounted on the main tool bar.

MV-2 Cane Plow



Illust. 1 — The MV-2 cane plow for use with Farmalls MV and MDV.

The MV-2 cane plow, adapted for use with Farmalls MV and MDV, is a popular unit equipped with forward-mounted 22-in. cap-down plow with 22-in. rolling colter and three long beams carrying two 10-in. plow-bottoms and one 14-in. middlebuster, each with an 18-in. rolling colter.

Under average conditions this plow will completely destroy and rebuild a finished row in a single operation. The capper breaks up the stubble clumps and turns under the crop residue, thereby leaving a clean surface.

For barring off the center beam with middlebuster, the capper standard, and the front rolling colter are taken off. The outside beams may then be spaced so

that the side plows cut the desired amount of balk. Many users also shave and off-bar at the same time, removing the rear middlebuster for this purpose.

Adapting parts (POSP-7076) for using the No. 2 cane plow on Farmalls MV and MDV can be supplied when ordered

Specifications

No.	Description	Net Weight (Approx.)
MV-2	Cane Plow	1,168 lb.





GRAIN DRILLS AND SEEDERS

Section 5

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Grain Drills

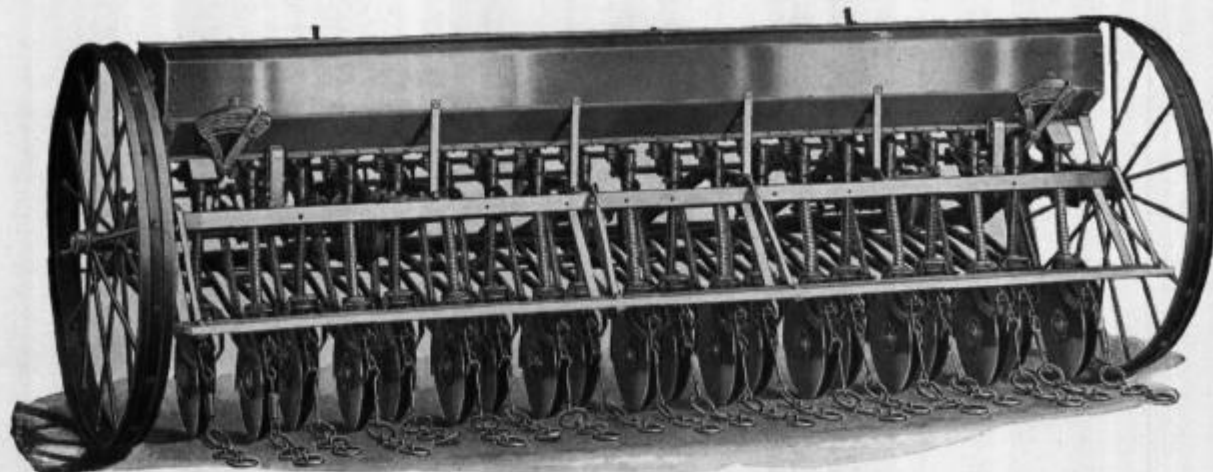
Grain Drill Types, Sizes, and Opener Equipment

Drill Designation	Type of Drill	Type of Feed	Drill Size		Kind of Openers				
			No. of Openers	Opener Spacing	Single Disk	Double Disk	Pin Hoe	Spring Hoe	Shoe
Type R Tractor Drills and Type R Horse-Drawn Drills	Plain	Fluted or Double Run	12	6 in.	13 in. dia. disk	Saw Blade	Straight or Zig-Zag Rank	Straight or Zig-Zag Rank	Straight or Zig-Zag Rank
			14	6 in.	— • —	Curved Blade	— • —	— • —	— • —
			16	6 in.	Open or Closed Delivery	— • —	— • —	— • —	— • —
			20	6 in.	— • —	— • —	— • —	— • —	— • —
			22	6 in.	— • —	— • —	— • —	— • —	— • —
			24	6 in.	— • —	— • —	— • —	— • —	— • —
			10	7 in.	— • —	Straight or Zig-Zag Rank	— • —	— • —	— • —
			11	7 in.	— • —	— • —	— • —	— • —	— • —
			12	7 in.	— • —	— • —	— • —	— • —	— • —
			14	7 in.	— • —	— • —	— • —	— • —	— • —
			16	7 in.	— • —	— • —	— • —	— • —	— • —
			18	7 in.	— • —	— • —	— • —	— • —	— • —
			8	8 in.	— • —	— • —	— • —	— • —	— • —
			12	8 in.	— • —	— • —	— • —	— • —	— • —
			16	8 in.	— • —	— • —	— • —	— • —	— • —
			9	7 in.	Semi-deep furrow openers (14 in. dia.) can be supplied with 12-8 and 16-8 Type R plain type tractor drills.				
			10	7 in.					
			11	7 in.					
			12	7 in.					
			13	7 in.					
Semi-Deep Furrow Tractor Drills Type H Tractor Drills	Plain	Double Run	16	10 in.	14 in. dia. disk	— • —	— • —	— • —	— • —
			12	10 in.	— • —	— • —	— • —	— • —	— • —
	Plain	Fluted or Double Run	28	6 in.	13 in. dia. disk	Saw Blade or Curved Blade	— • —	— • —	Straight or Zig-Zag Rank
		Double Run Only	24	7 in.	Semi-deep openers (14 in. dia.) can be supplied with 20-8 drills.	— • —	— • —	— • —	— • —
	Plain	Fluted	20	8 in.		Straight or Zig-Zag Rank	— • —	— • —	— • —
		Fluted	18	7 in.	— • —	Saw Blade	— • —	— • —	Straight or Zig-Zag Rank
Type B Tractor Press Drills Adjustable Plow Press Drills	Plain	Fluted	20	7 in.	— • —	Straight or Zig-Zag Rank	— • —	— • —	— • —
			24	7 in.	— • —	— • —	— • —	— • —	— • —
Adjustable Plow Press Drills	Plain	Fluted	8	Adjustable	— • —	Saw Blade	— • —	— • —	— • —
			10	Adjustable	— • —	— • —	— • —	— • —	— • —



Type R Tractor Plain Grain Drills

(Fluted Feed)



Illust. 1—Type R, 20-6 tractor plain drill with fluted feed and saw blade double-disk furrow openers. The full-length footboard is special equipment.

- Accurate seeding with forced feed.
- Fluted feed roll has full-length bearing for easy turning.
- Discharge gate adjustable to three positions for small, medium, and large size seeds.
- Quick-acting power lift.
- Rugged frame and tractor hitch.
- Fifteen sizes in 6, 7, and 8-in. spacings.

Type R tractor plain grain drills with fluted feed are known for their accurate seeding, durability, and

convenience of operation. The fluted type of feed has the advantage of always providing an even flow of seed regardless of the amount of grain in the hopper. Each feed cup has an adjustable discharge gate which may be set in three different positions. This makes it possible to sow small, medium size, and large size seed with the same degree of accuracy.

Regular Equipment

Furrow openers as specified. Steel wheels. Power lift. Tractor hitch. Covering chains with disk and shoe furrow openers. Fittings for pressure gun lubrication.

Special Equipment

Grass seed attachment. Fertilizer attachment for 6-in. drills. Front adjustable hand-lift levers. Footboards.

See also *Miscellaneous Attachments* page 174.

Sizes and Specifications

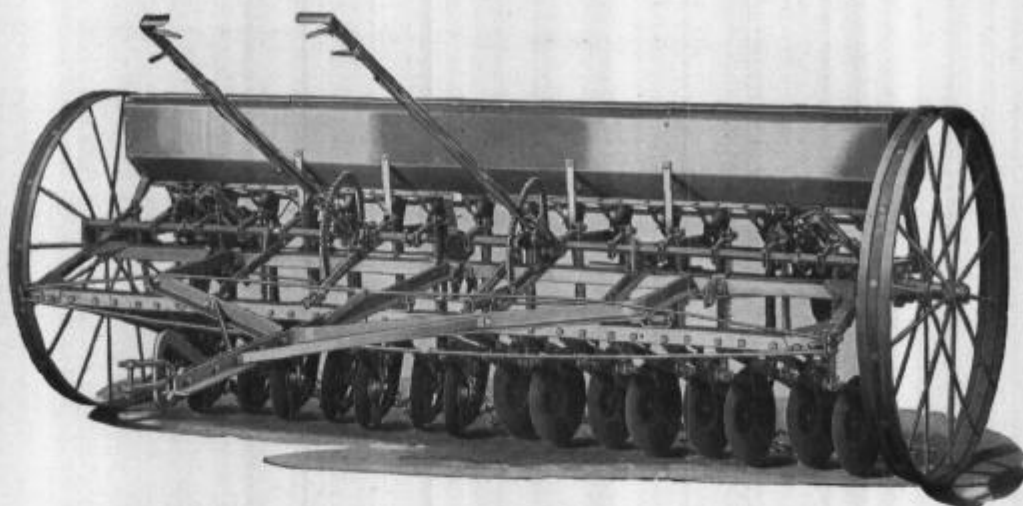
Drill Size	Power Lift	Wheel Rim Width	Approximate Weight (Pounds)				
			Single Disk	Saw Blade Double Disk	Pin Hoe	Spring Hoe	Shoe
12-6	Single	4-in.	996	1,068	894	906	900
14-6	Double	4-in.	1,160	1,244	1,019	1,047	1,048
16-6	Double	4-in.	1,283	1,379	1,130	1,146	1,155
20-6	Double	5-in.	1,554	1,674	1,360	1,380	1,394
22-6	Double	5-in.	1,651	1,783	.....	.....	1,475
24-6	Double	5-in.	1,743	1,887	.....	.....	1,551
10-7	Single	4-in.	903	963	814	824	823
11-7	Single	4-in.	957	1,023	861	872	869
12-7	Single	4-in.	1,045	1,117	943	955	949
14-7	Double	4-in.	1,219	1,303	1,096	1,110	1,107
16-7	Double	4-in.	1,383	1,479	1,255	1,251	1,255
18-7	Double	5-in.	1,503	1,611	1,333	1,351	1,359
8-8	Single	4-in.	817	865	751	759	753
12-8	Single	4-in.	1,071	1,143	972	984	975
16-8	Double	5-in.	1,450	1,545	1,307	1,323	1,322



Type R Tractor Plain Grain Drills

(Double-Run Feed)

Illust. 1—Type R, 16-7 tractor plain drill with double-run feed and single-disk furrow openers. The front adjustable hand-lift levers are special equipment.



Type R tractor plain grain drills with double run feed are used in many wheat growing sections and also where it is customary to drill a variety of large and small seeds such as soybeans, peas, lima beans and even corn in addition to small grains. The double run feed cup is really two feeds in one as it has a small opening on one side for small seeds and a large opening in the other side for larger seeds. The feed wheels and the feed cups are carefully made so that close fitting is possible for accuracy in sowing.

Regular Equipment

Furrow openers as specified. Steel wheels. Power lift. Tractor hitch. Covering chains with disk and shoe furrow openers. Fittings for pressure gun lubrication.

Special Equipment

Grass seed attachment. Fertilizer attachment for 6-inch drills. Front adjustable hand lift levers. Footboards. See also *Miscellaneous Attachments* page 174.

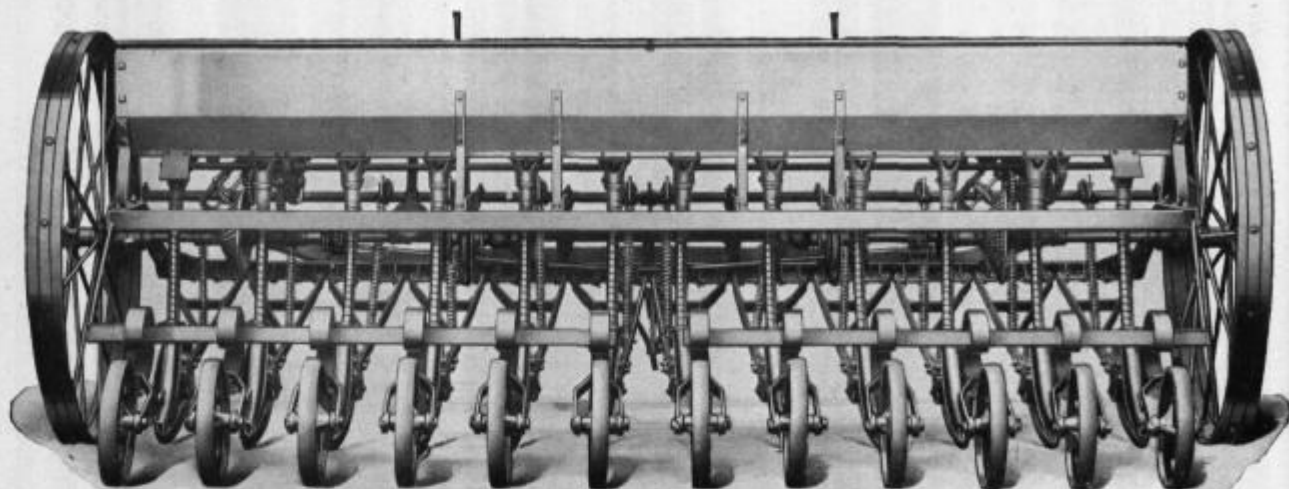
- Most accurate double-run feed built.
- Ten speed changes provided without change of sprocket.
- Factory-mounted speed transmission unit keeps all parts in perfect alignment.
- Quick-acting power lift.
- Rugged frame and tractor hitch.
- 15 sizes in 6, 7, and 8-in. spacing.

Sizes and Specifications

Drill Size	Power Lift	Wheel Rim Width	Approximate Weight (Pounds)				
			Single Disk	Saw Blade Double Disk	Pin Hoe	Spring Hoe	Shoe
12-6	Single	4-in.	1,048	1,120	946	958	952
14-6	Double	4-in.	1,223	1,307	1,082	1,096	1,111
16-6	Double	4-in.	1,368	1,464	1,215	1,231	1,240
20-6	Double	5-in.	1,622	1,742	1,428	1,448	1,462
22-6	Double	5-in.	1,730	1,862	.....	.....	1,554
24-6	Double	5-in.	1,810	1,954	.....	.....	1,618
10-7	Single	4-in.	937	997	848	858	857
11-7	Single	4-in.	985	1,051	889	900	897
12-7	Single	4-in.	1,100	1,172	988	1,010	1,004
14-7	Double	4-in.	1,287	1,371	1,164	1,178	1,175
16-7	Double	4-in.	1,450	1,546	1,302	1,318	1,322
18-7	Double	5-in.	1,542	1,650	1,372	1,390	1,398
8-8	Single	4-in.	845	893	779	787	781
12-8	Single	4-in.	1,126	1,198	1,027	1,039	1,030
16-8	Double	5-in.	1,527	1,623	1,384	1,400	1,399



Semi-Deep Furrow Tractor Grain Drills



Illust. 1 — Semi-deep furrow plain drill, 12-10, with 14-in. single-disk openers, power lift, and double-run feed. The single-wheel gang press wheel attachment shown is special equipment.

Semi-deep furrow grain drills are widely used for planting wheat in semiarid sections to give added protection to the seed and growing crop. The 14-inch single-disk furrow openers deposit the seed at the proper depth in a narrow trench where it is covered with moist soil, so that the seed is given the best possible environment to promote germination and rapid growth.

Semi-deep furrow drills are built in two sizes—12 and 16-disk furrow openers with 10-inch spacing—and are equipped with double-run feed. The rugged steel frame is cross-braced for added strength and holds all moving parts in perfect alignment. Semi-deep 14-inch single disk furrow openers can also be supplied for various 8-inch drills on special order (see table below), adapting these drills to semi-deep seeding.

Regular Equipment for 16-10 and 12-10 Semi-Deep Furrow Drills

Power lift. Tractor hitch. Steel wheels. Double-run feed. 14-in. single-disk furrow openers. Covering chains. Fittings for pressure-gun lubrication.

- 14-inch single-disk furrow openers with angle and undercut adjustment.
- Wide 10-inch spacing on 16-10 and 12-10 drills.
- Deposits seed in narrow trench and covers it with moist soil.
- Throws up ridges that protect against soil blowing and help to hold moisture.

Special Equipment for 16-10 and 12-10 Semi-Deep Furrow Drills

Adjustable hand-lift levers. Two-drill tractor hitch with either steel or pneumatic-tired tongue truck wheels. Single-wheel gang press wheels.

Seat. T-scrapers for furrow openers. Grass seed attachments. Baffle plate attachment for hopper. Center tooth attachment.

See also *Miscellaneous Attachments* page 174.

Sizes and Specifications

Drill Size	Power Lift	Wheel Rim Width	Approximate Weight in Pounds With 14-inch Single-Disk Furrow Openers	
			Double-Run Feed	Fluted Feed
16-10	Double	5-in.	1,643	.....
12-10	Double	5-in.	1,373	.....
**12-8	Single	4-in.	1,114	1,059
**16-8	Double	5-in.	1,511	1,434
*20-8	Double	5-in.	1,878	.....

**Type R tractor drills with semi-deep furrow openers. *Type H tractor drill with semi-deep furrow openers.

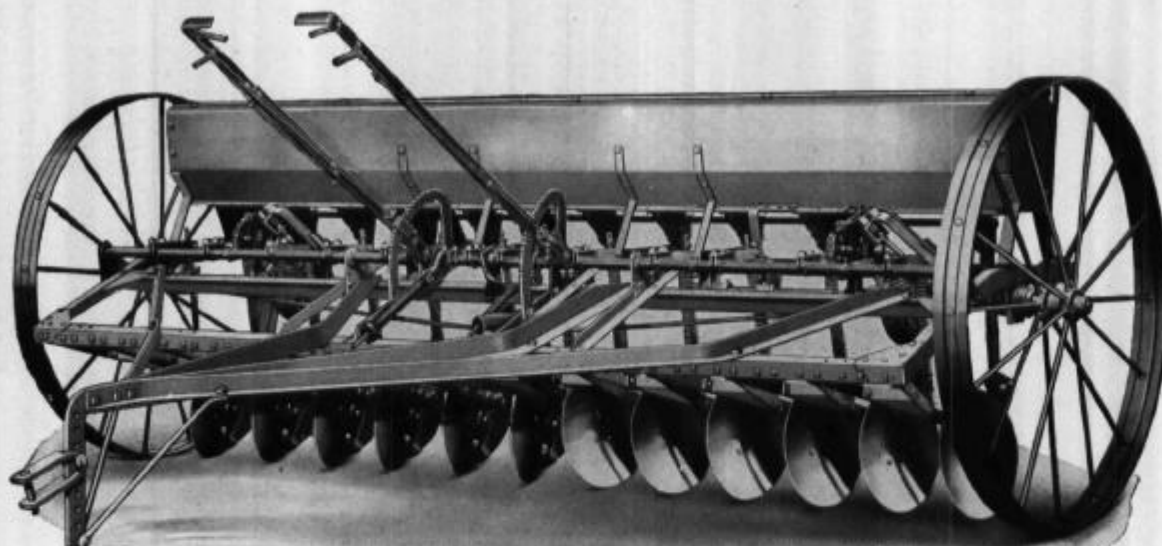


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Semi-Deep Furrow Tractor Grain Drills

(Continued)

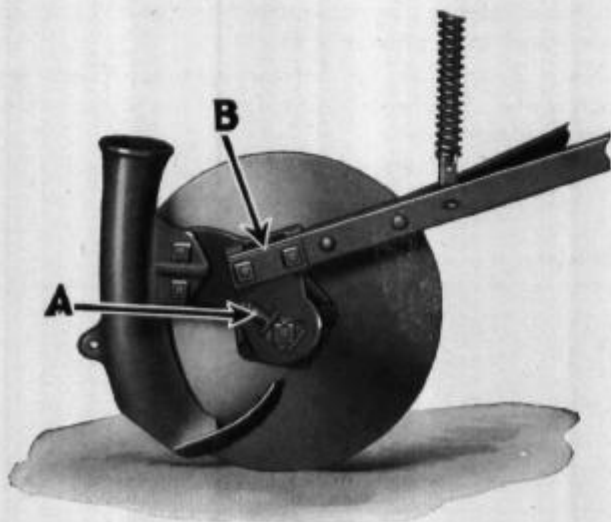


Illust. 1 — Semi-deep furrow drill, 12-10 size, shown equipped with special hand-lift levers, adjustable for length. Note the rugged tractor hitch, adjustable for height.

14-Inch Disks for Semi-Deep Seeding

Semi-deep furrow drills are regularly equipped with 14-inch single-disk furrow openers. These openers can also be supplied on special order with 8-inch drills (Type R and H). The 14-inch openers have the same bearing construction with accurately-fitted dust seals as the standard 13-inch opener described on page 167.

This design provides a free-turning disk and assures light draft with long life. A convenient adjustment is provided for increasing or decreasing the undercut of the disk by means of an adjuster placed between the drawbar and hanger. This enables the user to change the type of ridge made by the openers to meet requirements.



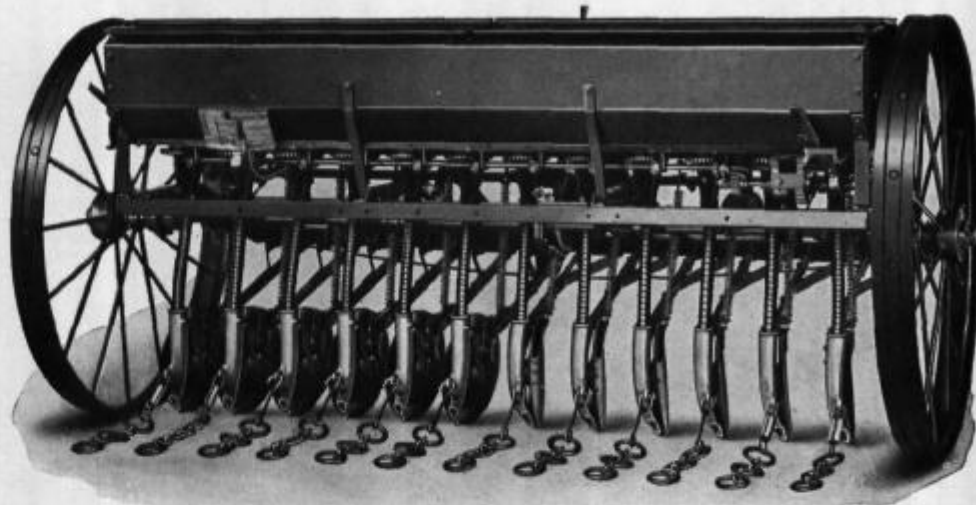
Illust. 2 — The 14-in. single-disk furrow opener regularly supplied with Semi-Deep drills and on special order for 8-inch drills (except press drills). (A), is fitting for convenient pressure-gun lubrication. (B) indicates angle and undercut adjustment.



Type R Tractor Fertilizer Grain Drills

(Fluted Feed)

Illust. 1 — Type R, 12-7 tractor fertilizer drill with fluted feed, power lift, and single-disk furrow openers. The fertilizer feeding mechanism is an integral part of the drill with a separate and independent drive.



Type R tractor fertilizer grain drills with fluted feed are widely used in grain growing sections where it is desired to apply fertilizer at the time of seeding. Plant food put in the row fertilizes the crop so that gains in yield return a substantial profit on the investment for this type of equipment.

The fluted feed provides an even flow of seed regardless of the amount of grain in the hopper. The fertilizer feed can be thrown off or on and the quantity easily and quickly changed while the drill is in motion. The amount of fertilizer can be closely regulated according to the user's need.

Regular Equipment

Furrow openers as specified. Tractor hitch. Hopper with separate compartments and feeds for grain and fertilizer. Steel wheels. Power lift. Fittings for pressure gun lubrication.

Special Equipment

Grass seed attachment. Front adjustable hand lift levers. Footboards. Speed reducing unit.

See also *Miscellaneous Attachments* page 174.

- Accurate seeding with forced feed.
- Discharge gate adjustable to three positions for small, medium and large size seeds.
- Sows 30 to 1135 pounds of commercial fertilizer to the acre.
- Easy running grain and fertilizer feeds assure light draft.
- All fertilizer parts accessible for convenient cleaning and adjustment.

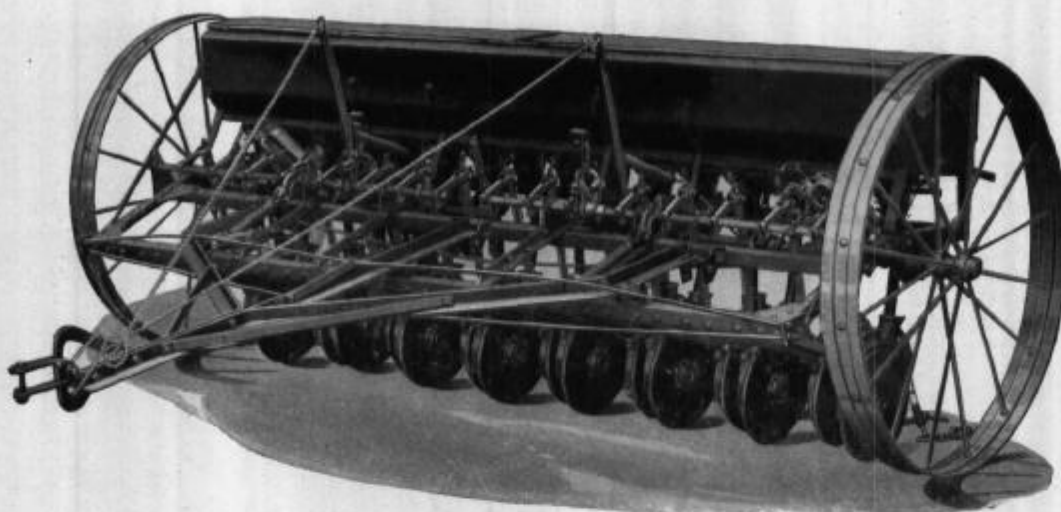
Sizes and Specifications

Drill Size	Power Lift	Wheel Rim Width	Approximate Weight (Pounds)					
			Single Disk	Saw Blade Double Disk	Curved Blade Double Disk	Pin Hoe	Spring Hoe	Shoe
9-7	Single	4-in.	1,021	1,075	1,057	942	951	940
10-7	Single	4-in.	1,089	1,149	1,129	1,000	1,010	1,009
11-7	Single	4-in.	1,156	1,222	1,200	1,060	1,071	1,068
12-7	Single	4-in.	1,256	1,328	1,304	1,144	1,166	1,160
13-7	Single	4-in.	1,331	1,409	1,383	1,128	1,231	1,257
16-7	Double	5-in.	1,697	1,793	1,761	1,549	1,565	1,569
8-8	Single	4-in.	982	1,030	1,014	916	924	918
9-8	Single	4-in.	1,062	1,116	1,098	985	994	981
10-8	Single	4-in.	1,129	1,189	1,169	1,045	1,055	1,049
12-8	Single	4-in.	1,299	1,371	1,347	1,200	1,212	1,203
16-8	Double	5-in.	1,789	1,879	1,847	1,640	1,656	1,655



Type R Tractor Fertilizer Grain Drills

(Double-Run Feed)



Illust. 1 — Type R, 16-7 fertilizer grain drill with double-run feed and saw blade double-disk openers.

Type R tractor fertilizer grain drills with double run feed are leaders in those sections that desire this general-purpose type of feed in a fertilizer drill. Growers of small grain and also of soybeans, peas, lima beans, and in some places even corn, profit by the sowing of both seed and fertilizer at the same time with these drills. The large capacity rust-resisting-galvanized hopper is designed for strength and to assure easy running feeds. There is sufficient range of adjustment for almost any desired application of nitrates, superphosphate or complete fertilizers. No tools are required to remove parts for cleaning and all parts are accessible for easy adjustment.

Regular Equipment

Furrow openers as specified. Tractor hitch. Hopper with separate compartments and feeds for grain and fertilizer. Steel wheels. Power lift. Fittings for pressure gun lubrication.

- Most accurate double run feed built.
- Ten speed changes provided without change of sprocket.
- Sows 30 to 1,135 pounds of commercial fertilizer to the acre.
- Easy-running grain and fertilizer feeds assure light draft.
- Quick-acting power lift.
- Rugged frame and tractor hitch.

Special Equipment

Grass seed attachment. Front adjustable hand lift levers. Footboards.

See also *Miscellaneous Attachments* page 174.

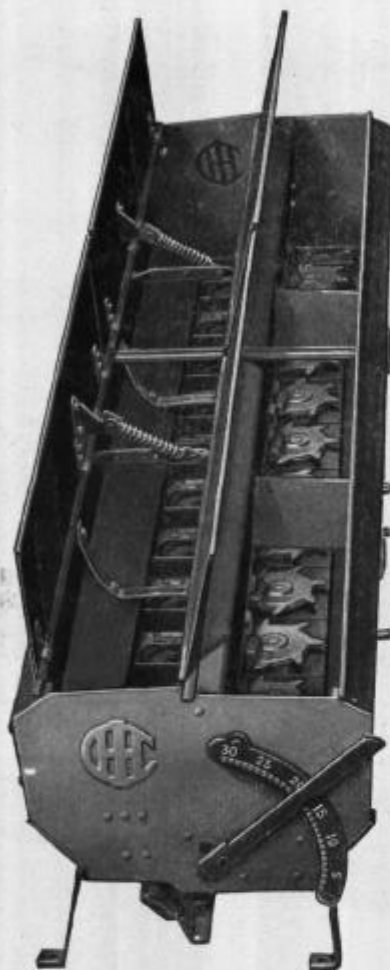
Sizes and Specifications

Drill Size	Power Lift	Wheel Rim Width	Approximate Weight (Pounds)					
			Single Disk	Saw Blade Double Disk	Curved Blade Double Disk	Pin Hoe	Spring Hoe	Shoe
9-7	Single	4-in.	1,050	1,104	1,086	971	980	969
10-7	Single	4-in.	1,124	1,184	1,164	1,035	1,045	1,044
11-7	Single	4-in.	1,182	1,248	1,226	1,086	1,097	1,094
12-7	Single	4-in.	1,281	1,353	1,329	1,179	1,191	1,185
13-7	Single	4-in.	1,381	1,459	1,433	1,270	1,283	1,307
16-7	Double	5-in.	1,772	1,868	1,836	1,624	1,640	1,644
8-8	Single	4-in.	1,013	1,061	1,045	947	955	949
9-8	Single	4-in.	1,091	1,145	1,127	1,014	1,023	1,010
10-8	Single	4-in.	1,155	1,215	1,195	1,071	1,081	1,075
12-8	Single	4-in.	1,318	1,390	1,366	1,219	1,231	1,222
16-8	Double	5-in.	1,842	1,926	1,894	1,699	1,715	1,702



Type R Tractor Fertilizer Grain Drills

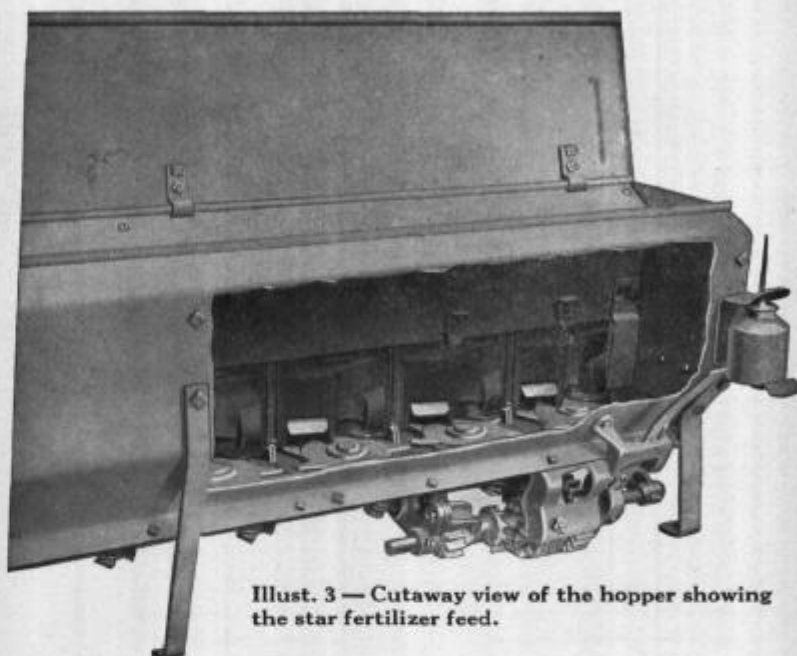
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Illust. 1 — Large-capacity hopper for fertilizer grain drill, showing fertilizer feed control. The hopper is all-steel for strength and copper-bearing for long life. The fertilizer feeding device for each furrow is a complete unit in itself.

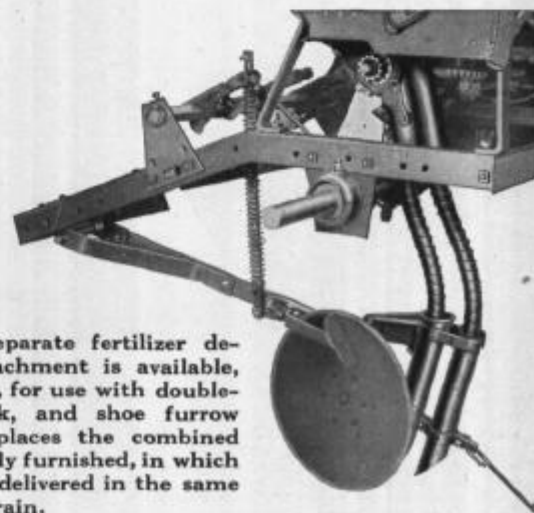


Illust. 2 — Close-up view of the star fertilizer feeding device. It assures accurately-controlled sowing with minimum waste. A soft steel driving pin is in the stem of each feed wheel and will shear off in case the feeds become clogged.



Illust. 3 — Cutaway view of the hopper showing the star fertilizer feed.

The **Fertilizer Feeding Mechanism** is not an attachment but an integral part of the drill with a separate and independent drive. The feed can be thrown off or on, and the quantity quickly changed while the drill is in motion. There is sufficient range of adjustment for almost any desired application of nitrate, or other commercial preparations. The mechanism can be set to sow from 30 to 1,135 pounds of commercial fertilizer to the acre. A fast-and-slow speed lever on the fertilizer drive unit regulates the sowing quantities and they are further controlled by a lever on the end of the hopper. All the quantity gates are moved by this lever, hence, all must deliver an equal quantity to each furrow. Raising or lowering the gates regulates the quantity of fertilizer carried to the feed tubes. For unusual sowing requirements, special parts are available.



Illust. 4 — A separate fertilizer delivery tube attachment is available, on special order, for use with double-disk, single-disk, and shoe furrow openers. It replaces the combined delivery, regularly furnished, in which the fertilizer is delivered in the same tube with the grain.



Grain Drill Features

(Fluted and Double-Run Feeds)



Illust. 1—Fluted-roll feed cup cut away to show how the roll journal provides a full-length bearing. The adjustable bottom is shown here with gate latch in top notch, reducing outlet to smallest opening. This is the correct setting for small grains, flax, kaffir corn, lespedeza, etc.



Illust. 2—Fluted-roll feed cup with adjustable bottom (A) shown latched in bottom notch. This is the correct setting for sowing large size beans, peas, etc. A middle notch is provided on opposite side (cut away in illustration) for sowing trashy oats and intermediate size seeds.



Illust. 3—Fluted-roll feed cup with adjustable bottom (A) unlatched and dropped down to permit cleaning. This is a desirable feature when a different kind of seed is to be sown or when the hopper is cleaned out at the end of the season.

Fluted Force Feed

This is a popular type of feed for sowing all varieties of cereal grains and other drilled crops ranging in size from small seeds such as flax, lespedeza, brome grass, etc., to large seeds such as peas, beans, and even ensilage corn. The fluted feed rolls provide a positive force-feed, highly accurate and reliable. The fluted roll shaft is chain driven from the drill axle. Seeding quantities are quickly controlled by means of a lever which regulates the distance to which the fluted part of the rolls extends into the feed cups. An indicator plate and pointer provide a convenient gauge for proper setting. The feed cups have an adjustable gate or bottom which can be set in any one of three different positions for different size seeds and sowing quantities (see accompanying illustrations). Once the gates are properly adjusted and the feed rolls set to sow the desired quantity per acre, the amount will not vary.

Illust. 4—Special speed reducing unit for fluted feed grain drills. This unit reduces the sowing quantities by one-half compared to the regular speed. On the regular speed drive the chain runs directly from the drill axle to the feed roll shaft.



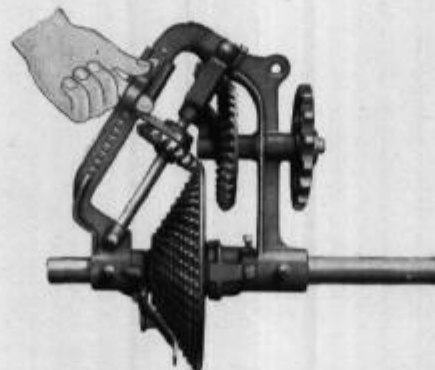
Double-Run Feed

The double-run type of feed is highly accurate. It is capable of handling all varieties of grains and seeds within a wide quantity range and makes possible the sowing of treated wheat and peas without cracking. The feed wheels are double-faced, one side having suitable size cells for handling small seeds, the other with larger cells and a somewhat greater diameter for handling bigger seeds.

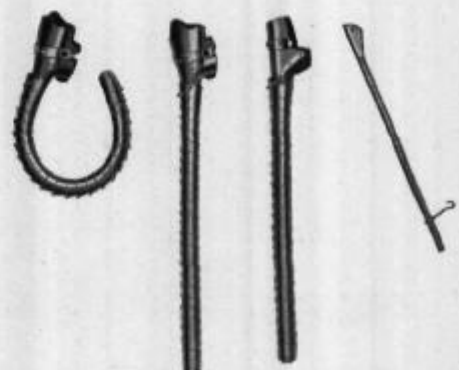
Covers are provided for shutting off the side of the feed cups not used. Sowing quantities are regulated primarily by the speed at which the feed wheels revolve. The cone-gear speed transmission permits ten speed changes. This, together with the three different size drive sprockets available, makes possible a total of thirty different quantity changes.



Illust. 5—Double-run feed cup showing side of feed wheel used for wheat and similar size seeds. The other side of the feed wheel is used when sowing peas, beans, etc. Special reducers are inserted in the feed cups when a minimum quantity of small seeds such as flax, alfalfa, and grain sorghums are sown.



Illust. 6—Speed transmission for double-run feed drills. Ten speeds can be obtained by moving the sliding bevel gear which engages the multiple gear. By changing drive sprockets additional speeds are obtained so that a total of 30 different quantity adjustments is possible.



Illust. 7—Steel ribbon grain tubes showing the flexible construction of the tubes and the various styles of tube tops supplied. The small tube at right is used on grass seed attachments. All tubes are made of special rust-resistant steel.



Grain Drill Furrow Openers

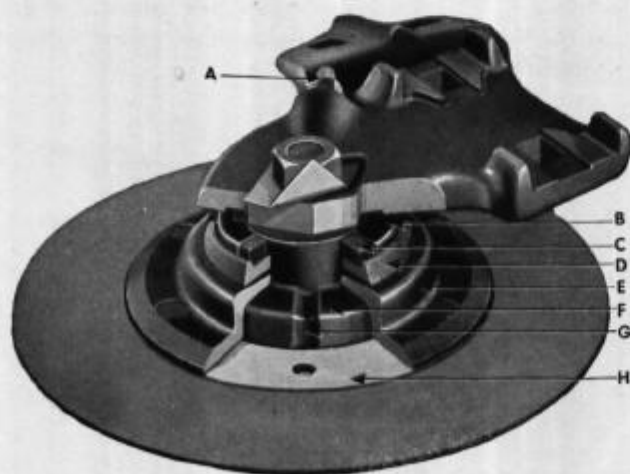
(Single-Disk)



Illust. 1—Open delivery furrow openers. This type is usually preferred in trashy ground as the disk boot acts as a shield and there are fewer openings in which stalks can wedge.



Illust. 2—Closed delivery single-disk furrow opener. All single-disk openers have rocker rib adjustment (shown by arrows) to take up wear on the scraper. This type of opener is popular for sticky soils.



Illust. 3—Cross section of single-disk furrow opener bearing, showing (A) lubrication fitting; (B) felt dust seal retainer and 3-pronged spring; (C) felt dust seal; (D) metal dust seal; (E) rotating bearing housing; (F) bearing block; (G) lubrication channel in bearing block, and (H) gasket dust seal.

Open or Closed Delivery

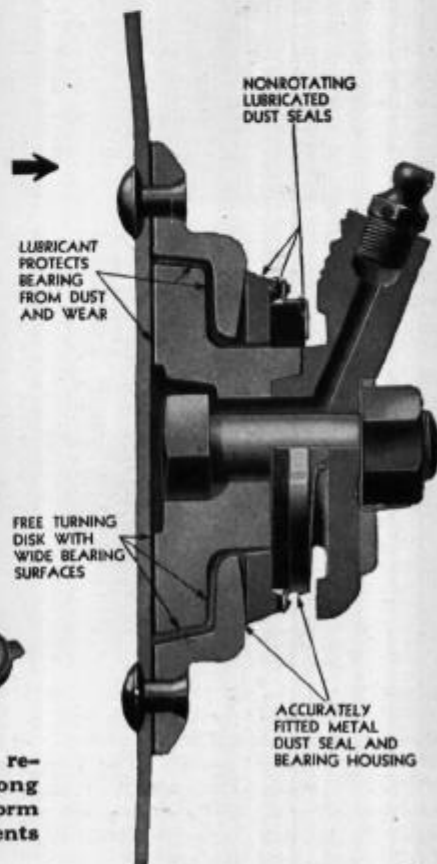
Single-disk furrow openers are available with open or closed delivery and in either straight or zigzag rank. Under normal soil conditions, where stalks are the principal problem, open delivery furrow openers are usually preferred as the disk boot acts as a shield and there are fewer openings in which stalks can wedge. Closed delivery furrow openers are usually preferred in heavy gumbo and sticky soils. Disk blades are of 13-inch diameter, (except for semi-deep and deep furrow openers), and are heat-treated for long wear and great strength. The construction of the disk bearing, with its dust-proof, lubricated, metal-to-metal seal, assures a free-turning, long-life disk.

The drag bars are attached to the convex side of the disk to leave the working side bare and unobstructed. An adjustment is provided at the front end of the drag bar to respace disks easily and quickly when necessary. In this way even distance between the rows can always be maintained. The T-scraper has a self-adjusting blade and is quickly changed from working position when not needed without removing from the boot.

Illust. 4—Cross section of single-disk furrow opener showing the bearing construction and dust seals which effectively guard against entrance of dirt and grit to assure long life. In addition to a heavy felt washer or seal around the bearing block there is an accurately fitted metal seal adjacent to the rotating bearing housing. A film of lubricant under pressure forms an effective dirt seal between the rotating and non-rotating metal surfaces.



Illust. 5—Felt seal retainer. The 3-prong spring provides uniform pressure and prevents seal from shifting.



Grain Drill Furrow Openers

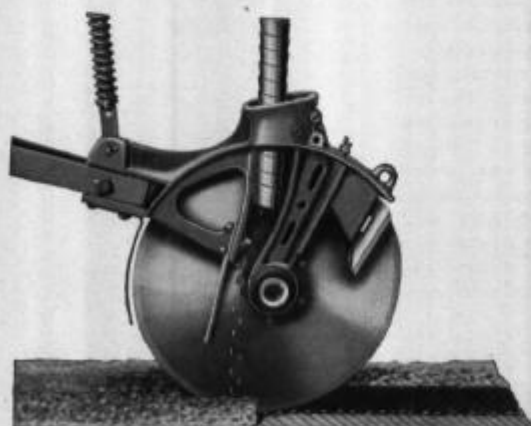
(Double Disk)



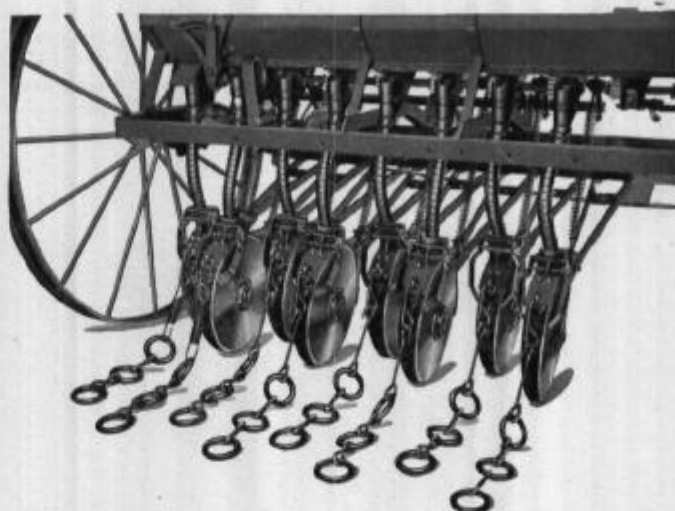
Illust. 1 — Double - disk, front delivery furrow opener, saw-blade type. The bearings are protected by dust seals assuring free-turning disks at all time.



Illust. 2 — Two fittings for pressure-gun lubrication are provided on each opener, assuring lubrication to each disk bearing. The inside scrapers are constructed for long wear. The holding spring maintains light, even pressure of the scrapers against the disks.



Illust. 3 — Delivery of the seed in front of the disk hub makes it possible to put the seed in the ground with the downward movement of the disk to provide uniform covering of seed at tractor speeds. The improved concave-type tube channel prevents the tube from buckling when seeding in uneven ground. The tube stop is located on the front side of the tube channel thus eliminating any possible interference with the seed.

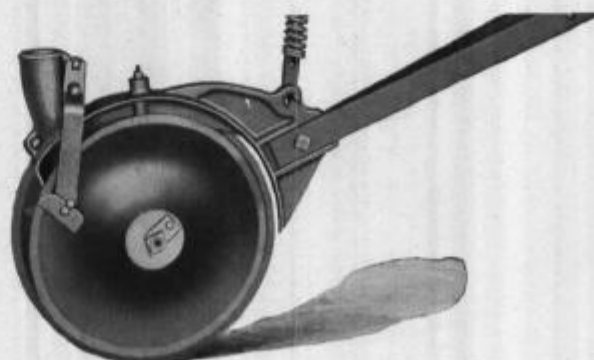


Illust. 4 — Section of a drill shown equipped with double-disk saw-blade openers in zig-zag rank. Six-inch clearance between the openers provides ample room to clear trash. Covering chains aid in uniform covering of seed.

Front Seed Delivery

Double-disk furrow openers with front seed delivery are available in either straight or zig-zag rank and with either saw blade or curved blade disks. These openers form a roomy seed trench and drop the seed "ahead of the dirt" at the bottom of the furrow where moisture conditions are most favorable for quick germination. They are especially popular for use in well prepared seed beds reasonably free from trash, where uniform seed covering at tractor speeds is a paramount factor.

The disks are provided with fittings for pressure-gun lubrication. Scrapers—inside and outside—keep the disks clean. The outside scrapers are adjustable and can be thrown out of position when not needed without removing from the boot.

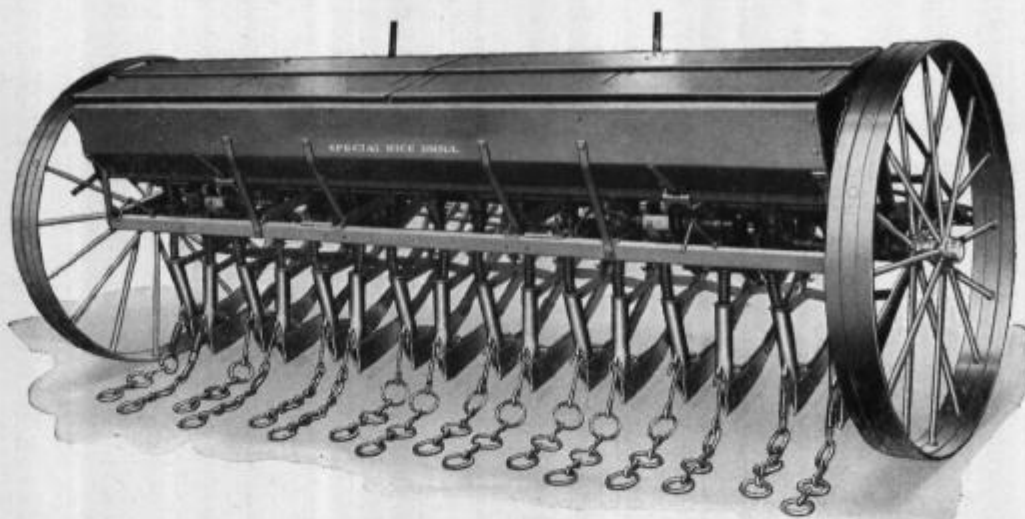


Illust. 5 — Curved blade type, double-disk furrow openers are available when ordered. The curved blades have bulging centers and one blade is slightly larger than the other to assist in penetration.



Grain Drill Furrow Openers

(Shoe, Pin Hoe and Spring Hoe)



Illust. 1 — The 16-7 fertilizer rice drill, with double run feed and shoe furrow openers. This rice drill is available also in the 12-7 size. It has many galvanized steel parts to resist rust.



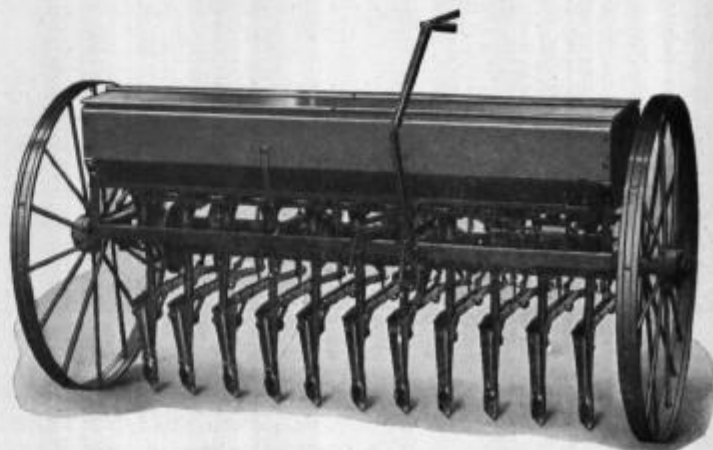
Illust. 2 — Shoe furrow opener. Blades are made of high carbon steel and scour in any kind of soil. These openers can be used where deep penetration is not required. The depth gauge attachment is special equipment.



Illust. 4 — The spring hoe furrow for use in stony or stumpy ground. This type hoe has a spring release which allows the hoe to pass an obstruction and then come back automatically to normal position.



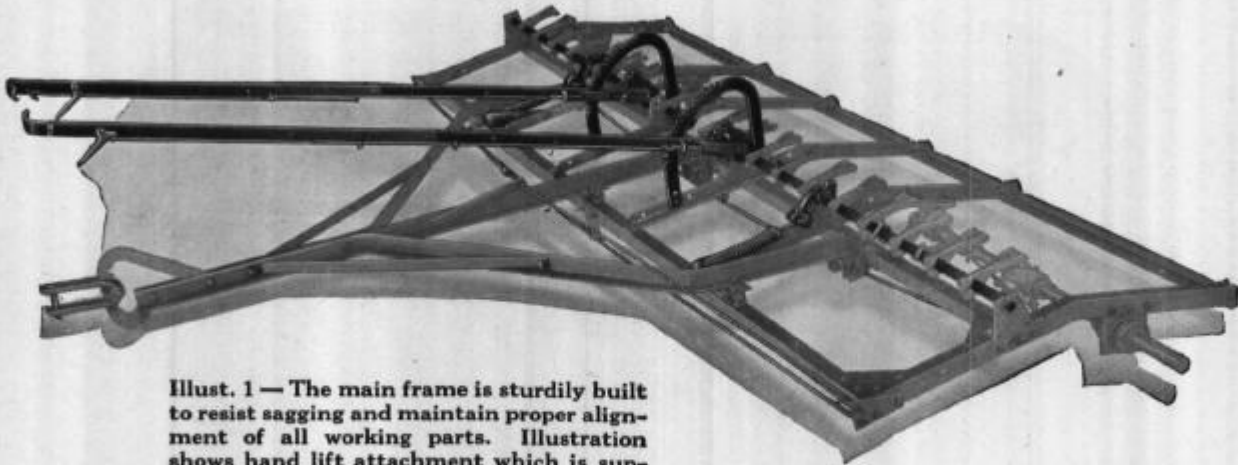
Illust. 3 — Pin hoe furrow opener, showing three adjustment holes on ear of hoe for regulating the angle of penetration. Any excessive strain breaks the pin and prevents injury to the hoe.



Illust. 5 — Type-R, 11-7, horse-drawn fertilizer grain drill equipped with pin hoe furrow openers.



Grain Drill Features

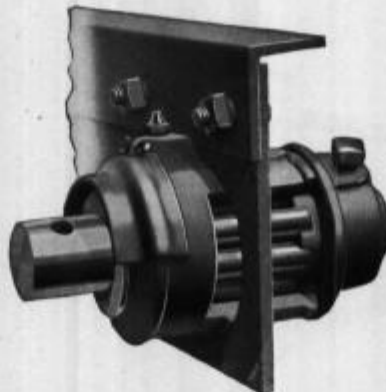


Illust. 1 — The main frame is sturdily built to resist sagging and maintain proper alignment of all working parts. Illustration shows hand lift attachment which is supplied on special order. Levers are adjustable for length.

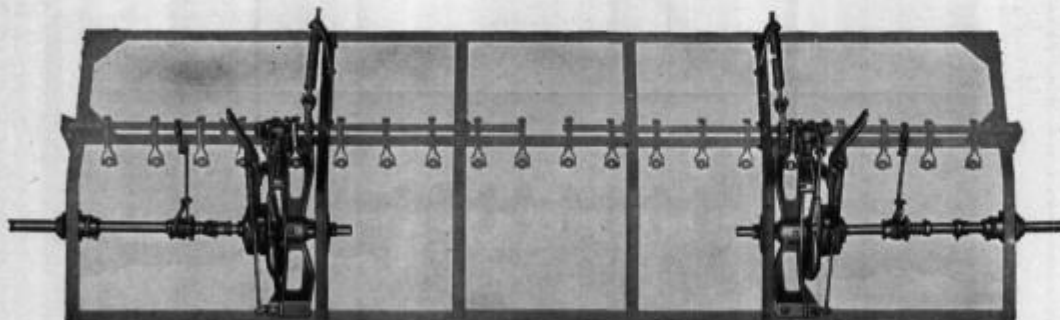
Sturdy Main Frame — All-Steel Hopper

The drill frame is constructed of angle steel to provide maximum supporting strength with minimum weight. A center frame rail is supplied to support the pressure mechanism. This together with cross rails at close intervals and steel gussets riveted across the corners, and addition of truss rods on the larger sizes, completes an exceptionally strong and durable design. The outer axle roller bearings are located in self-aligning boxes to prevent binding and assure smooth running on uneven ground. The mounting of the all-steel hoppers on the frame produces great strength and flexibility, permitting the drill as a whole to conform to uneven ground without binding the feeding mechanism.

Hopper lid ends and edges act as a stiffening bead and form a continuous hinge for the lid. This hinge forms a permanently tight joint against which grain may be poured without spilling and waste of seed. Maximum seed capacity is provided, the hopper on the 16-7 and larger size plain drills holding approximately a bushel per foot of length.



Illust. 3 — The axles are equipped with self-aligning roller bearings, contributing greatly toward light draft. Fittings for pressure-gun lubrication are provided.



Illust. 2 — Overhead view of main frame showing power lift (one for each drill section), supplied regularly with all tractor drills. The lift is simple and quick-acting, raising the furrow openers to maximum clearing height regardless of depth of seeding. All 14-opener drills and larger have 2-piece axles.



Illust. 4 — Large-capacity, rust-resisting all-steel hopper for the larger size grain drills. The hopper is easy to fill without spilling or wasting feed.



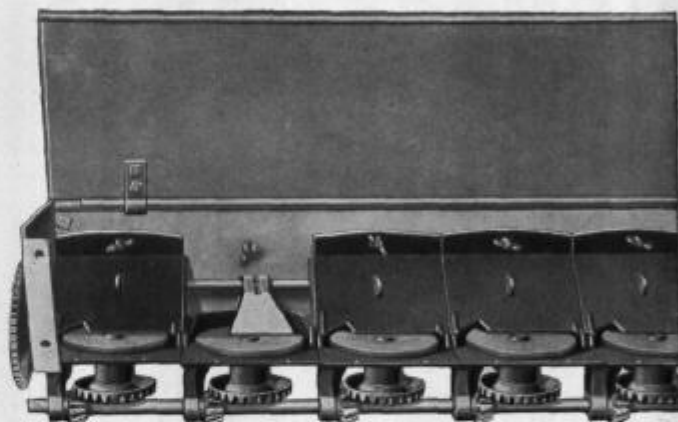
Fertilizer Attachments for Plain Type Drills

Illust. 1 — Fertilizer attachment with all-steel hopper and combined delivery for 20-6 drill (left half shown). Adjustments permit sowing quantities of ordinary fertilizer from $13\frac{1}{2}$ to 136 pounds per acre with the disk wheel feed that is supplied as regular equipment.



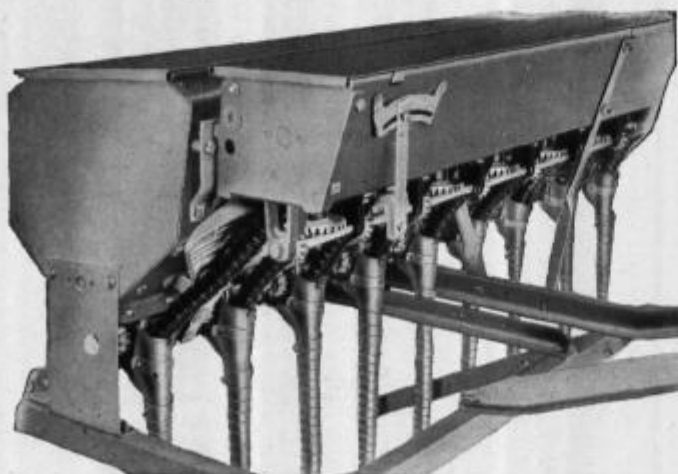
For Type R, 6-Inch Drills

The fertilizer attachment can be supplied for all six-inch drills of either fluted or double-run type (except 28-6 size which is available for fluted feed only). These attachments are designed to be mounted on the rear side of the grain hopper and are driven from the main axle. On stub axle drills (except 28-6 size) an extension is provided to carry the fertilizer drive parts. Any commercial fertilizer can be successfully sown provided it is dry and free-running. The copper-bearing, all-steel fertilizer hopper has a capacity of about seven quarts per foot of length. Adjustments permit sowing quantities of ordinary fertilizer from $13\frac{1}{2}$ to 136 pounds per acre with the disk feed wheel that is supplied as regular equipment. The star feed wheel, available on special order, will sow approximately 85 to 260 pounds per acre. The star fertilizer feed wheel is similar to that supplied for regular fertilizer drills.



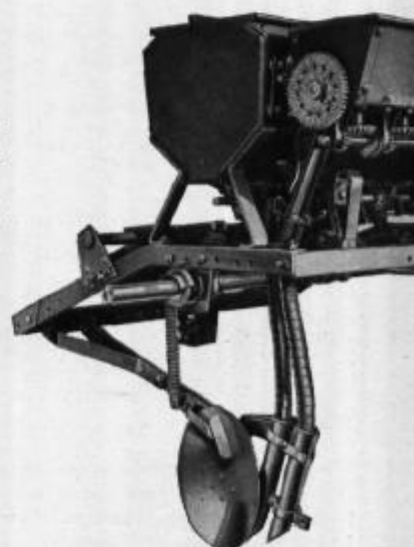
Illust. 3 — Interior view of the fertilizer attachment hopper, showing disk wheel feed that is controlled by a screw-type gate rod. One fertilizer back plate has been removed to show the gate that controls quantity.

For Type B Tractor Press Drills

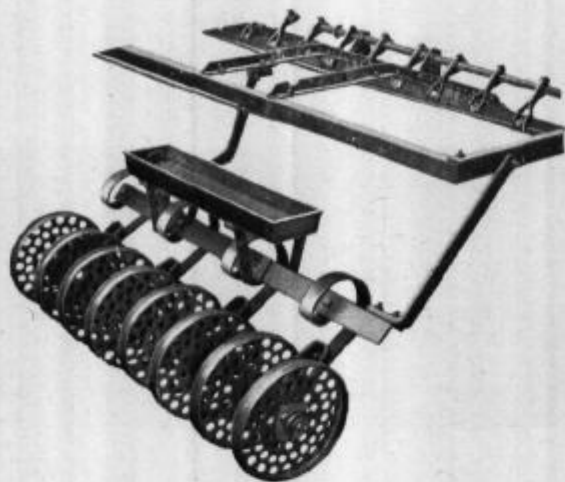


Illust. 2 — The fertilizer attachment for the Type-B tractor press drill consists of two separate steel boxes which attach to the front of the grain box. This attachment is equipped with dial feed wheels. Star feed wheels are available on special order.

Illust. 4 — Detail of fertilizer attachment for Type R drills, showing end of hopper with control for sowing different quantities. Fertilizer attachments can be supplied with either separate delivery tubes (as shown) or with combined delivery.



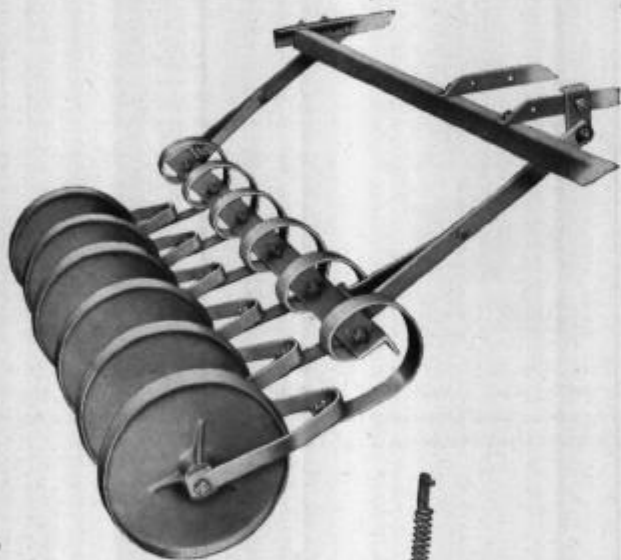
Press Wheel Attachments for Grain Drills



Illust. 1—Gang press wheel attachment, double-wheel type, for tractor drills. The weight box shown is special equipment.



Illust. 4—Gang press wheel attachment, double-wheel type, for horse-drawn drills. The seat is not included with the press wheel attachment but is supplied regularly with horse-drawn plain type drills.



Illust. 2—Gang press wheel attachment, single-wheel type, for 7 and 8-in. drills. Note method of attaching to drill frame.

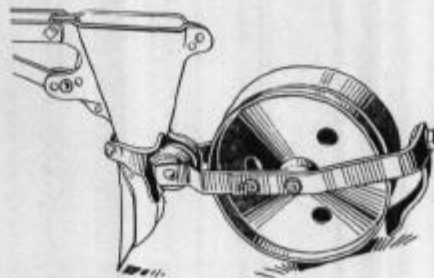


Illust. 3—Beet press wheel attachment for single-disk openers. The press wheel is free to pivot independent of the opener. Wheels can be assembled to form an open or closed wheel.

Gang press wheel attachments follow the drill furrow openers, packing the soil over the seed and leaving low ridges on either side. These ridges and trenches prevent the wind from blowing the soil from the seed and afford protection against winter thaws and freezes. Attachments can be supplied for all drills having an even number of furrow openers.

Sizes and Weights of Gang Press Wheel Attachments

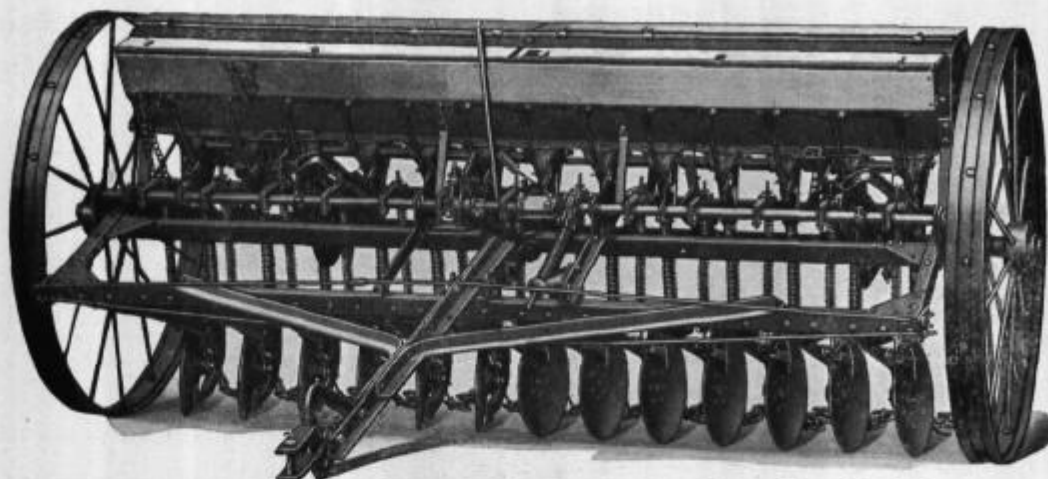
Size Drill	Single Wheel Net Weight	Double Wheel Net Weight	Size Drill	Single Wheel Net Weight	Double Wheel Net Weight
12 x 6	.....	253 lb.	13 x 7	293 lb.	.....
14 x 6	.....	291 lb.	14 x 7	318 lb.	298 lb.
16 x 6	.....	331 lb.	16 x 7	359 lb.	337 lb.
18 x 6	.....	368 lb.	18 x 7	404 lb.	377 lb.
20 x 6	.....	405 lb.	24 x 7	530 lb.	486 lb.
22 x 6	.....	445 lb.	8 x 8	215 lb.	182 lb.
24 x 6	.....	487 lb.	9 x 8	225 lb.	.....
28 x 6	.....	596 lb.	10 x 8	236 lb.	222 lb.
9 x 7	210 lb.	.....	12 x 8	283 lb.	262 lb.
10 x 7	228 lb.	218 lb.	16 x 8	387 lb.	342 lb.
11 x 7	242 lb.	.....	20 x 8	470 lb.	457 lb.
12 x 7	270 lb.	256 lb.	12 x 10	339 lb.	.....



Illust. 5—Beet press wheel attachment for hoe openers. Similar type press wheels are also available for drills with shoe openers.



Grass Seed Attachments for Grain Drills

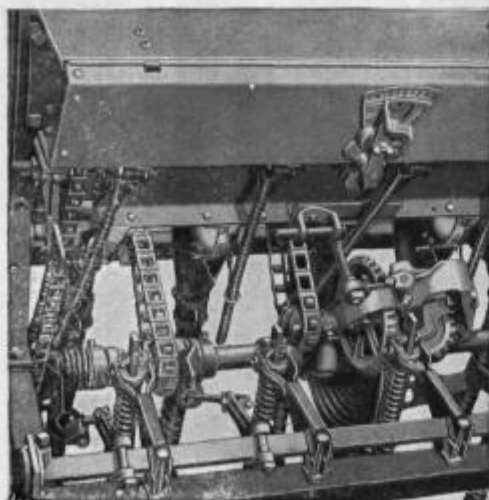


Illust. 1 — Grass seed attachment shown mounted on a Type R, 13-7 fertilizer grain drill. Grass seed attachments can be supplied for all sizes of drills, both fertilizer and plain type.

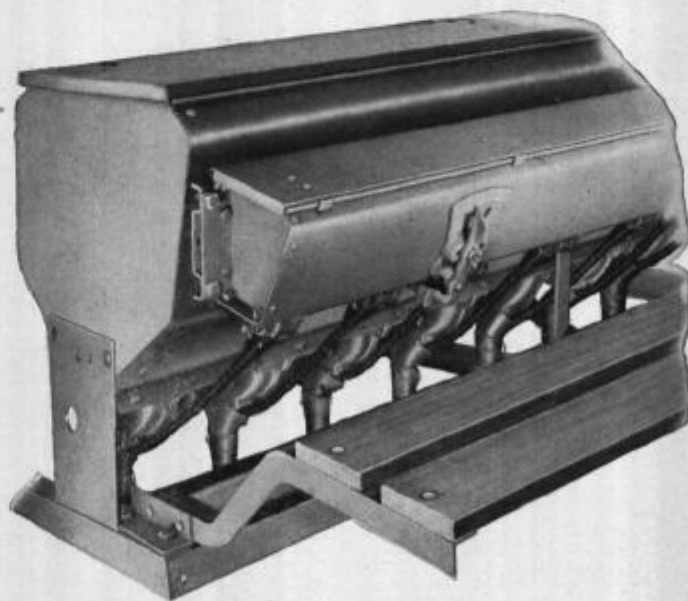
Grass seed attachments are available for all sizes of plain and fertilizer type grain drills. The all-steel grass seed hopper is secured to the regular grain hopper and is always ready for use. The attachment has a fluted force feed similar to a grain feed, but with small size cups, rolls, and ribbon tubes. It is driven from the main axle by a chain drive and the quantity of grass seed sown is regu-

lated by an index lever. The operator may stop the grass seed feed without interfering with the grain feed.

The grass seed can be sown through the grain tubes or broadcast ahead or behind the furrow openers. When seed is to be broadcast behind the furrow openers, special long tubes are required—(see Illust. 2).



Illust. 2 — Grass seed attachment with special rear-delivery grass seed tubes which permit broadcasting the grass seed independently of the grain and behind the furrow openers. The regular grass seed tubes are shorter and deliver the seed directly into the grain tubes.

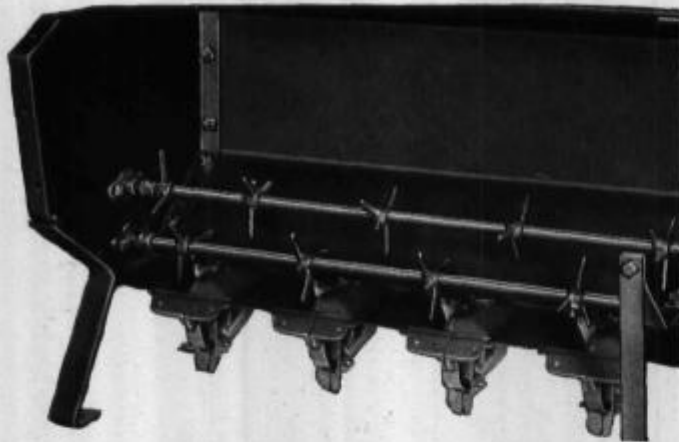


Illust. 3 — Grass seed attachment for Type B tractor press drill. Illustration shows the regular type grass seed tubes. These tubes deliver the seed into the grain tubes so that the grain and grass seed are mixed and sown together. The grass seed attachment will handle all varieties of small grass seeds, alfalfa, clover, etc.



Grain Drill Attachments

(Miscellaneous)



Illust. 1 — Hopper with front side removed to show the grain agitator attachment. Grain agitators can be supplied either in double rod type (as shown) or in single rod type. Fertilizer agitators are also available as special equipment.



Illust. 2 — The two-drill tractor hitch makes it possible to seed large acreages quickly and economically. Two-drill hitches are available either with steel caster wheels or with pneumatic-tires. The hand lift levers shown are special equipment.



Illust. 3 — Marker attachments make it easy to steer a straight course without overlapping or skipping. This shows a Type H drill equipped with double disk marker. Automatic bar markers are available for Type R drills.

Special Attachments and Equipment Available for IH Grain Drills

Fertilizer:

- Fertilizer attachments for plain type drills—
 - for Type R, 6-in. spacing.
 - for Type H, 28-6, fluted feed only. } specify dial or star feed
 - for Type B, press drills.
- Fast speed sprocket for fertilizer drive.
- Fertilizer agitator attachments for fertilizer drills.
- Separate delivery attachments (for delivering fertilizer through separate tubes and boots).
- Fertilizer feed shut-off plates (used when seeding beets, beans, etc. in rows).

Grass Seed:

- Grass seed attachments with regular length tubes for front or combined delivery.
- Grass seed attachments with long tubes for rear delivery.

Hitches:

- Tractor hitches for Type R horse-drawn drills.
- Special horse hitches for Type R horse-drawn drills.
- Two-drill tractor hitches with either steel or pneumatic-tired (4.00 x 9-in.) wheels.

Lifts:

- Power lift attachments (single or double) for drills regularly equipped with hand lift.
- Hand lift attachments (end or front center lever type).
- Adjustable front hand lift lever attachment (for operation from tractor).

Markers:

- Automatic bar marker attachment for Type R drills.
- Disk marker attachments, single (right or left hand only) or double (complete) for 20-6, 22-6, 24-6, 16-7, 18-7, and 16-8 drills.

Miscellaneous:

- Grain agitator attachments, single or double rod.
- Cup covers for fluted feed (for closing off a portion of the cups when sowing beets, beans, etc. in rows).
- Reducers for double-run feed (used when seeding flax, alfalfa, grain sorghums, etc.).
- Fast oat sprockets (for fluted-feed drills).
- Speed reducing unit for sowing very small quantities (for fluted-feed drills).
- Foot boards—end, center, or full-length.
- Hopper baffle plate attachment.
- Seat attachment.
- Depth gauge attachment for shoe openers.
- Shields for deep furrow openers.

Press Wheel:

- Gang press wheel attachments.
- Weight box for gang press wheel attachment.
- Special seat braces (when drill seat is used on gang press wheel attachment).
- Beet press wheel attachments (specify for single-disk, hoe, or shoe openers).

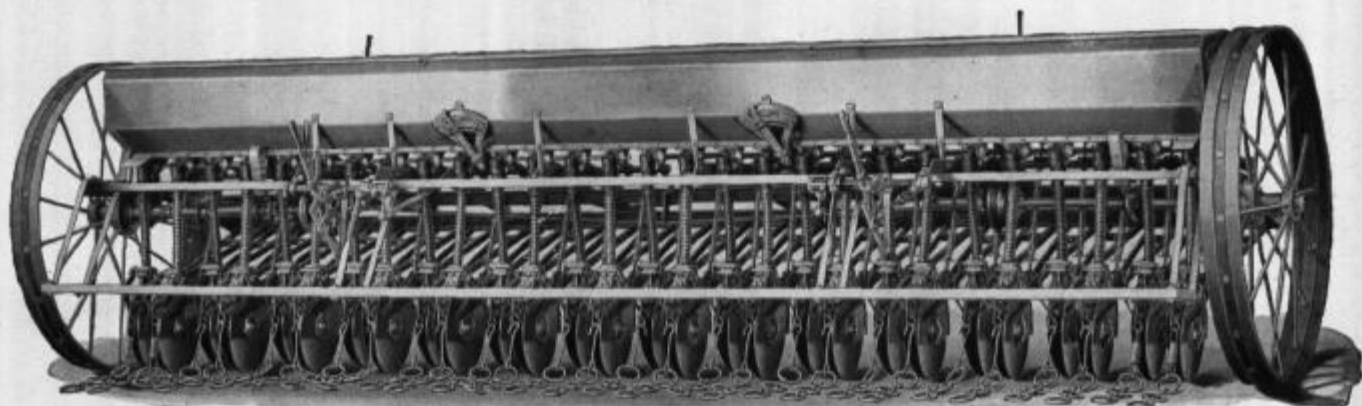
Wheels:

- 4-in. rims instead of regular 3-in.
- 5-in. rims instead of regular 4-in.
- 6-in. rims instead of regular 5-in.
- Pneumatic-tired wheels (5.00 x 40-in., 4-ply tires).
- Extension rims for steel wheels.
- Wheel scrapers.



Type H Tractor Grain Drills

(Plain Type)



Illust. 1 — Type H, 28-6 size, tractor drill equipped with fluted feed, power lift, and saw-blade double-disk openers. The full-length footboard is special equipment.

Type H tractor drills are built in three sizes and are designed especially for heavy-duty service. With the 28-6 drill it is possible to seed from 40 to 60 acres a day and do it easily. Thus thousands of grain growers in sections where large acreages must be seeded quickly have found these drills ideally suited to their needs.

The construction of these drills is amply strong for their large capacities yet is not so heavy as to make their operation unwieldy. The power lift is built for strength and simplicity. It is quick acting and raises the furrow openers to maximum height regardless of the depth of seeding.

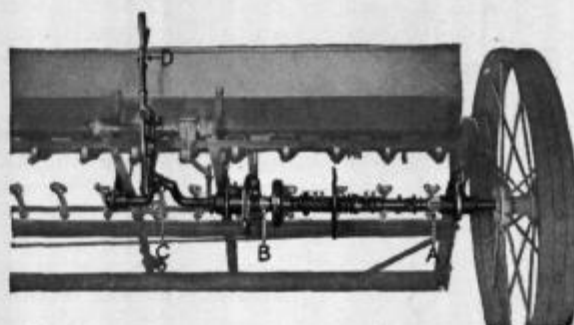
Regular Equipment

Disk or shoe furrow openers, as specified. Covering chains. Fluted or double-run feed — (see Specifications below). Power lift. Pressure gun lubrication fittings.

Special Equipment

Grass seed attachment. Fertilizer attachment for 28-6 drill. Adjustable hand lift levers. Two-drill hitch with either steel or pneumatic tire tongue truck wheels. Gang press wheel attachments. Single and double-disk markers. Full-length footboard. Five-inch extension rim attachment.

- Seeds large acreages quickly and economically.
- Extra-sturdy construction for heavy-duty service.
- Quick-acting power lift designed for strength and simplicity.
- Fluted and double-run feeds available with choice of disk and shoe furrow openers.



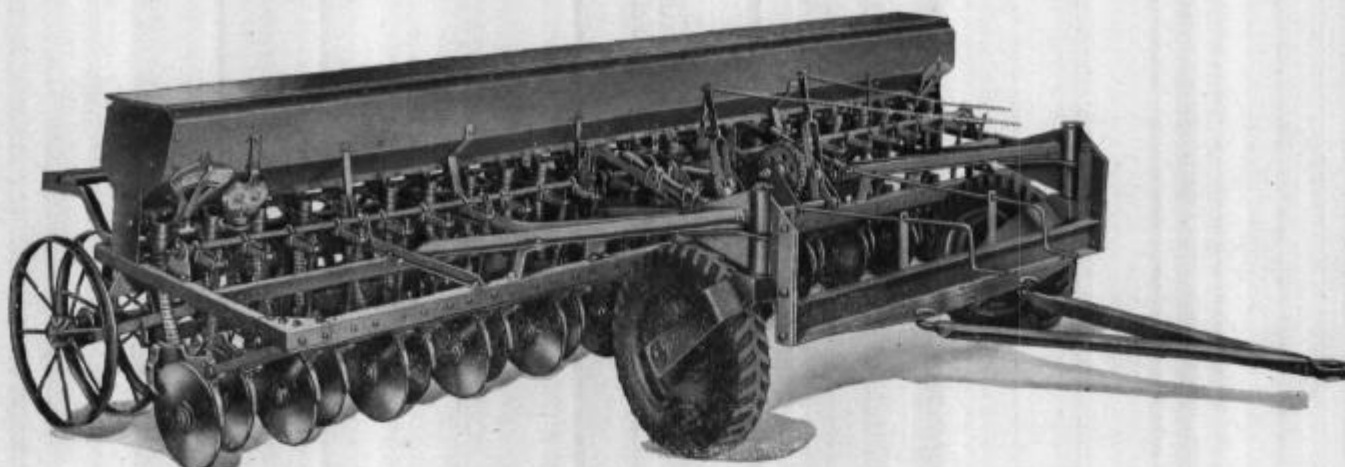
Illust. 2 — Two power lifts are supplied on each Type H tractor drill for maximum efficiency. Roller bearings at (A) and (B) contribute to light draft. Lifting crank (C) is short and powerful. Lever (D) adjusts depth of seeding. This is quickly and easily regulated to suit varying soil conditions.

Sizes and Specifications

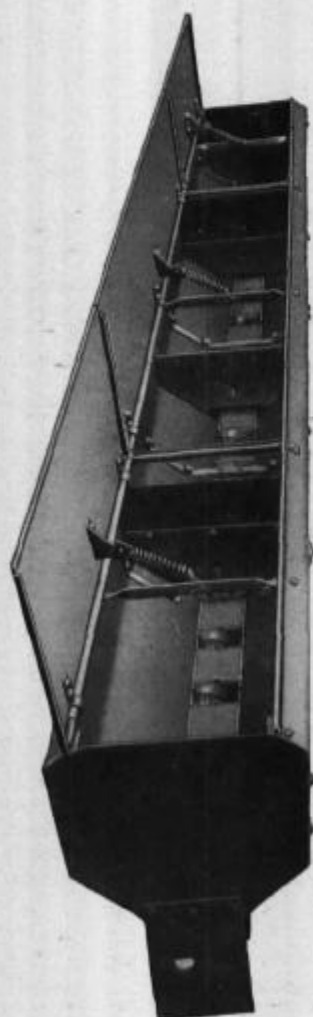
Drill Size	Power Lift	Wheel Rim Width	Approximate Net Weight (Pounds)					
			Single Disk		Saw Blade Double Disk		Shoe	
			Fluted Feed	Double-Run Feed	Fluted Feed	Double-Run Feed	Fluted Feed	Double-Run Feed
28-6	Double	5-in.	2142	2189	2310	2357	1970	2017
24-7	Double	5-in.	....	2055	....	2199	....	1915
20-8	Double	5-in.	....	1898	....	2018	....	1790



Type B Tractor Press Drills



Illust. 1 — The large-capacity 24-7 Type B power-lift tractor press drill. These drills are built in 24-7, 20-7, and 18-7 sizes. All sizes have fluted force-feed.



Illust. 2 — Large-capacity hopper for 20-7 press drill. The full-height baffles shown prevent seed piling up in the center.

Type B tractor press drills are designed and built from front to rear for tractor operation. They have the strongest forecarriage and frame construction ever built into any press drill. Improved forecarriage caster wheels, for use with 6.00 x 16-in. pneumatic tires, reduce draft and do not dig into soft soil. Heavy angle beams, extending from the forecarriage in front to the evener bracket supports in the rear, provide straight-line pull from the tractor through the forecarriage to the press wheel gangs, relieving draft strains.

These sturdy steel members also support the hopper and frame and tie them to the forecarriage to make a single unit. The center frame rail strengthens the frame against pressure from the openers while cross braces, steel corner pieces and gussets all help to provide correct support strength with minimum weight. The strong A-frame hitch hooks into the channel between the two caster wheels and can easily be removed without tools. An end-to-end, two-drill hitch is available as special equipment. The location of the grain hopper helps to balance the weight between the press wheels and the forecarriage. The principal weight is on the press wheels, where it should be for efficient work. The three press wheel gangs have unusual flexibility, being connected to the frame with an equalizer arrangement which permits all

- Strongest forecarriage and frame ever incorporated in a press drill.
- Screw-type regulators for accurately adjusting correct seeding depth.
- Correct weight distribution assures proper weight on press wheels.
- Tapered hopper ends permit hinging two drills for end-to-end operation.

of the press wheels to follow the contour of the ground.

These power-lift press drills are driven by a single extra-strong steel chain from the center press wheel gang.

Regular Equipment

Power lift. Tractor hitch. Fluted force-feed. High-speed, double-disk furrow openers.

Special Equipment

End-to-end, two-drill tractor hitch with transport attachment. Horse hitches. Hand lift attachment. Pneumatic tires (6.00 x 16-in.) for forecarriage. Fertilizer attachment. Grass seed attachment. Speed reducing unit for fluted feed.

Sizes and Specifications

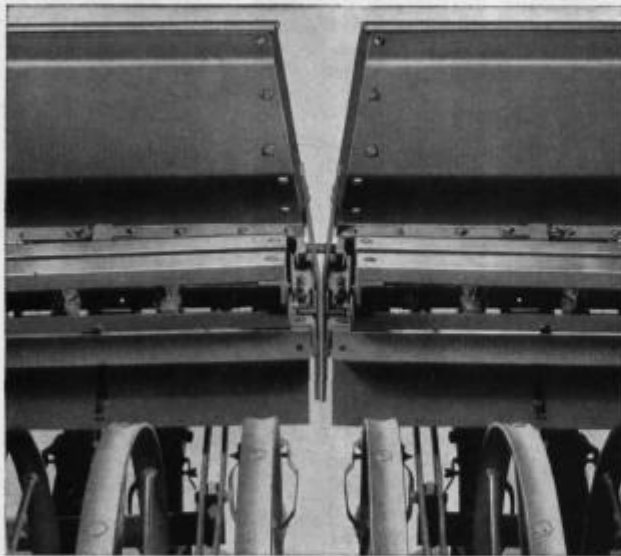
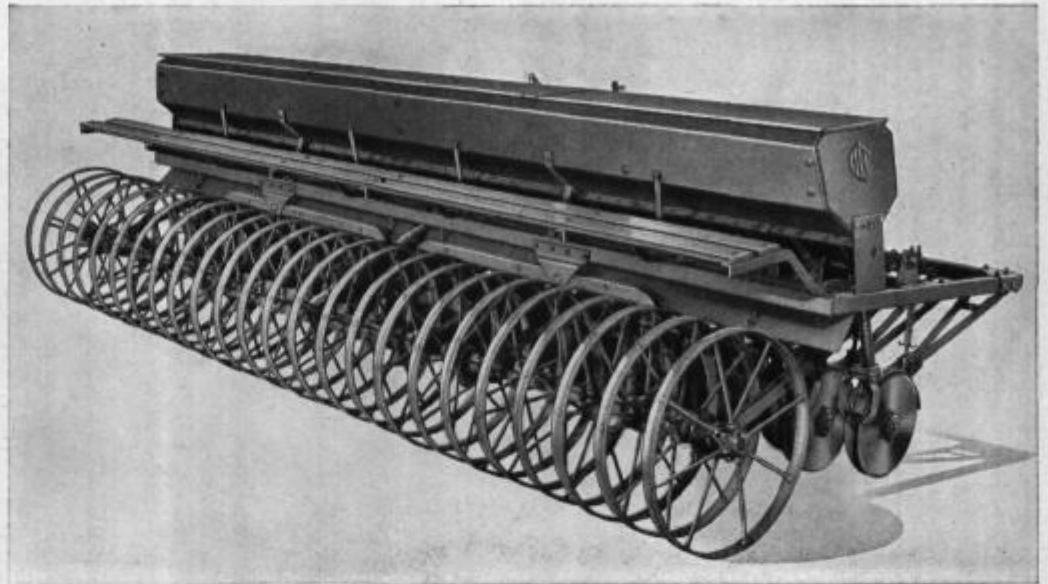
Size	Description	Net Weight (Approx.)
24-7	Press drill with double disk furrow openers.....	3010 lb.
20-7	Press drill with double disk furrow openers.....	2834 lb.
18-7	Press drills with double disk furrow openers.....	2550 lb.
24-7	Press drill with shoe furrow openers.....	2674 lb.
20-7	Press drill with shoe furrow openers.....	2554 lb.
18-7	Press drill with shoe furrow openers.....	2298 lb.



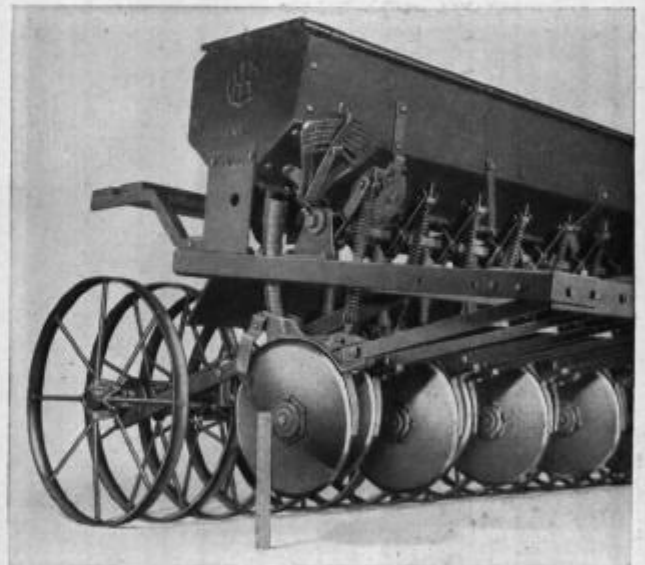
Type B Tractor Press Drills

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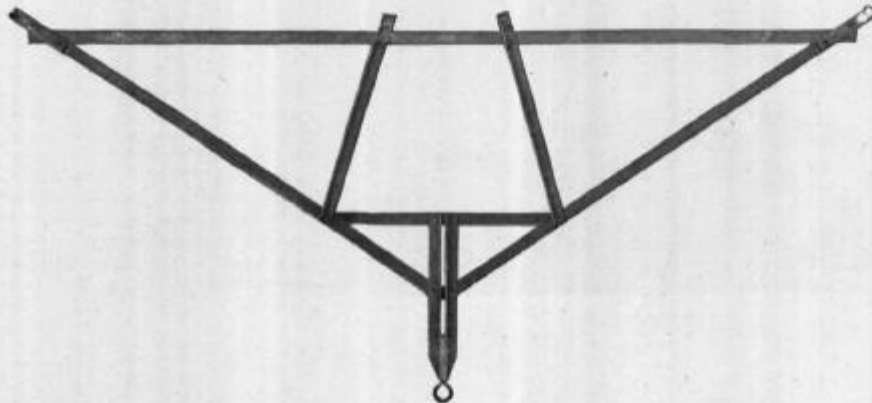
Illust. 1—Rear view of the Type B 24-7, power-lift tractor press drill. Note the full-length foot-board and stone shield.



Illust. 2—A special hitch permits hitching two drills end-to-end. The ends of the hoppers are tapered so that the two drills will hinge freely. Extra-heavy, wide bumper plates are also provided with the two-drill hitch.



Illust. 3—Regardless of the depth of seeding, the press drill furrow openers are always raised to the same height above the ground by the positive power lift.

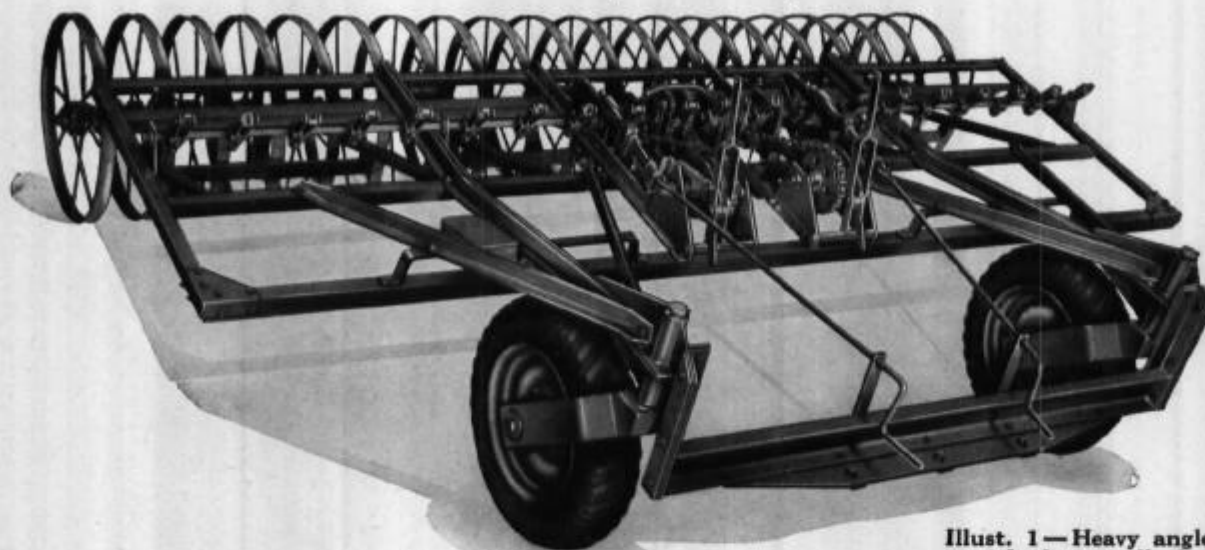


Illust. 4—The Type B two-drill, end-to-end hitch is of extra-strong construction, being made of heavy pipe and angle steel. It can be attached easily in place of the regular one-drill hitch. The two-drill hitch is so constructed as to hold the two drills in alignment and at the same time allow a flexible coupling. Extra-wide and heavy steel bumper plates provide ample surface for contact between the drills.

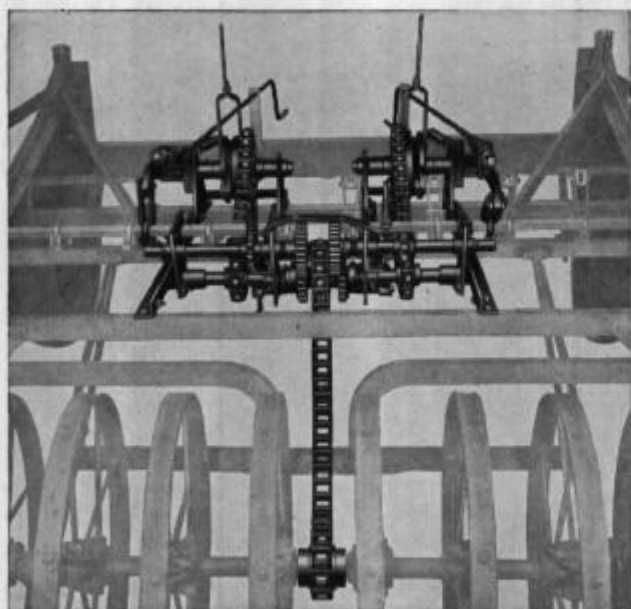


Type B Tractor Press Drills

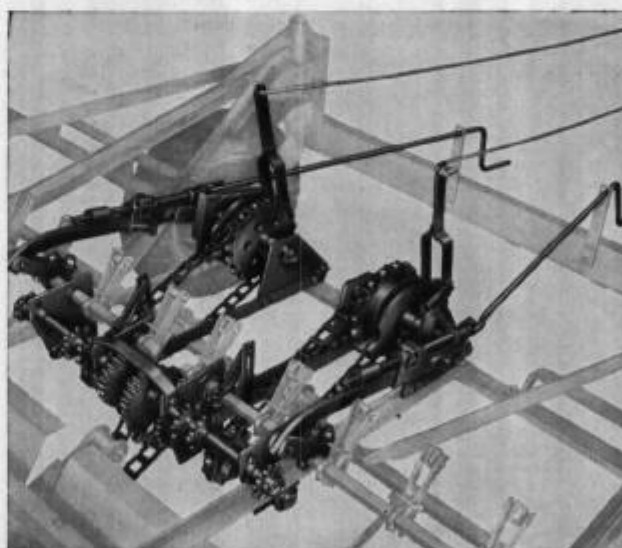
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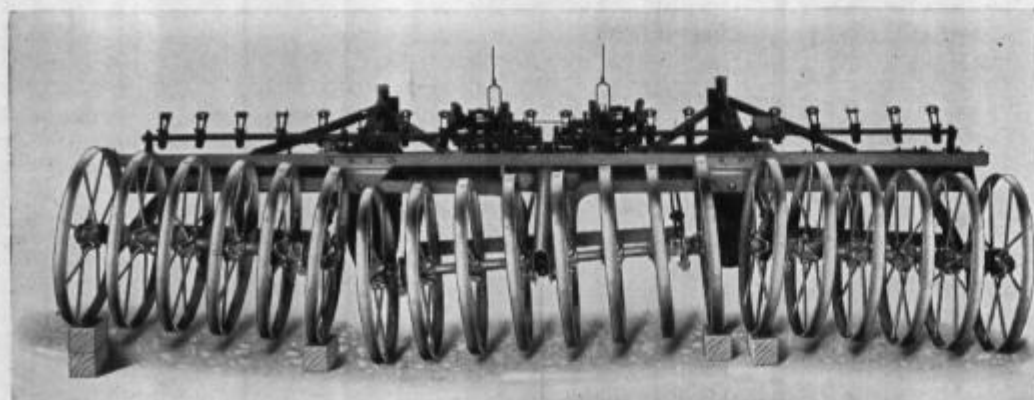
Illust. 1—Heavy angle beams provide straight-line pull from the tractor through the forecarriage to the press wheel gangs, relieving draft strains.



Illust. 2—Main drive mechanism and double power-lift. The right side of the mechanism is shown with power-lift raised and out of gear; the left side is shown in gear.



Illust. 3—Top view of double power-lift and countershaft from which seeding mechanism is driven. Sprockets for driving fertilizer and grass seed attachments are also shown.



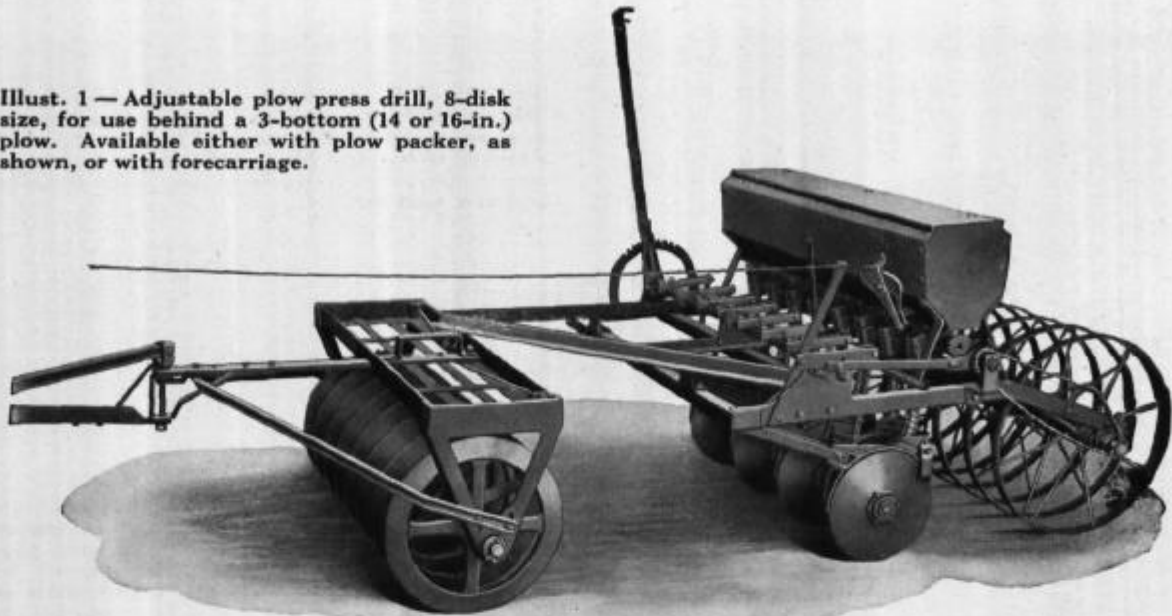
Illust. 4—The press wheel gangs are connected to the drill frame with an equalizer arrangement for maximum flexibility. Dirt-and-stone shields are provided to prevent foreign material from entering at the top of the boot when the drill is operating at high tractor speeds.



Adjustable Plow Press Drills

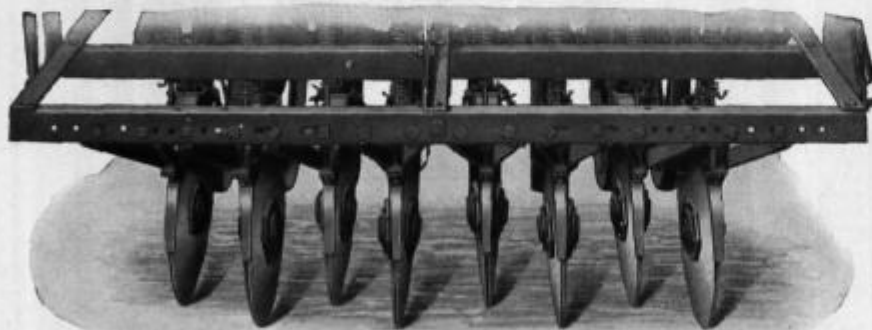
(For Use Behind 3 and 4-Furrow Plows)

Illust. 1 — Adjustable plow press drill, 8-disk size, for use behind a 3-bottom (14 or 16-in.) plow. Available either with plow packer, as shown, or with forecarriage.



- Furrow openers, pressure arms and press wheels are *adjustable to width of plowing*.
- *Universal hitch* fits any make of plow—works with either forecarriage or packer.
- *Independent press wheel drive* provides differential action.
- Plowing, packing, and seeding *in one operation* retains more moisture in soil.

These plow press drills eliminate wide "guess" rows and double seeding, because the space between the furrow openers can be adjusted to the width of plowing. Two sizes of drills are available—the 8-disk for use behind 3-furrow plows and the 10-disk drill for 4-furrow plows. Both can be had with either plow packer or forecarriage. The universal hitch fits any make of plow and works with either forecarriage or packer. The large-capacity steel hopper, combined with the angle-steel main frame, provides maximum strength and long life. The hopper holds $\frac{3}{4}$ -bushel of seed per foot and has a maximum height of 42 inches. A convenient in-and-out-of-gear device, rope-controlled from the tractor seat, is provided. The lifting lever is long and easy to operate.



Illust. 2 — Front view of press drill furrow openers, shown adjusted to narrow position. The pressure arms on the rock shaft and the rear press wheels are also adjustable to correspond to the furrow opener setting. The 8-disk drill is adjustable for 45, 48, and 51-in. settings; the 10-disk drill for 58 and 60-in. settings.

Specifications

Drill Size	Description	Net Weight (Approx.)
8-disk	Plow press drill with forecarriage and hitch to plow.....	812 lb.
8-Disk	Plow press drill with 7-wheel plow packer and hitch to plow.....	1096 lb.
10-Disk	Plow press drill with forecarriage and hitch to plow.....	944 lb.
10-Disk	Plow press drill with 9-wheel plow packer and hitch to plow.....	1369 lb.



Adjustable Plow Press Drills

(Continued)

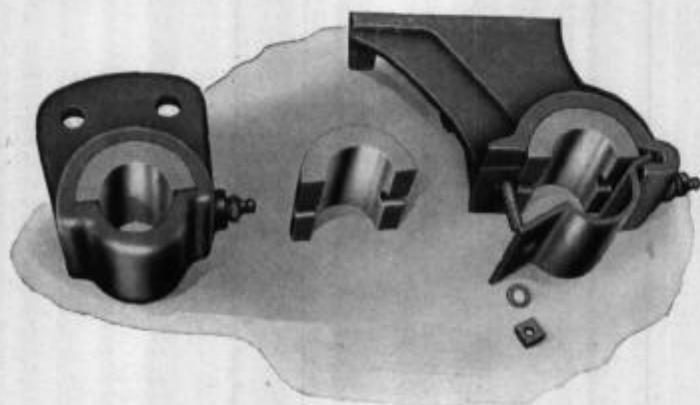


Illust. 1—(left) Adjustable plow press drills are supplied either with forecarriage, as illustrated, or with plow packer as shown on preceding page. The forecarriage is pivotally attached to the drill hitch and permits full flexibility. The copper-alloy, rust-resisting hopper holds three-fourths of a bushel of seed per foot.

The press wheels for adjustable plow press drills are designed for great strength and durability. They are held in position by springs and adjustable ratchet collars which makes each wheel drive independent and provides differential action for turning at the end of the field. The construction provides greater strength as it eliminates the need for holes in the axle.

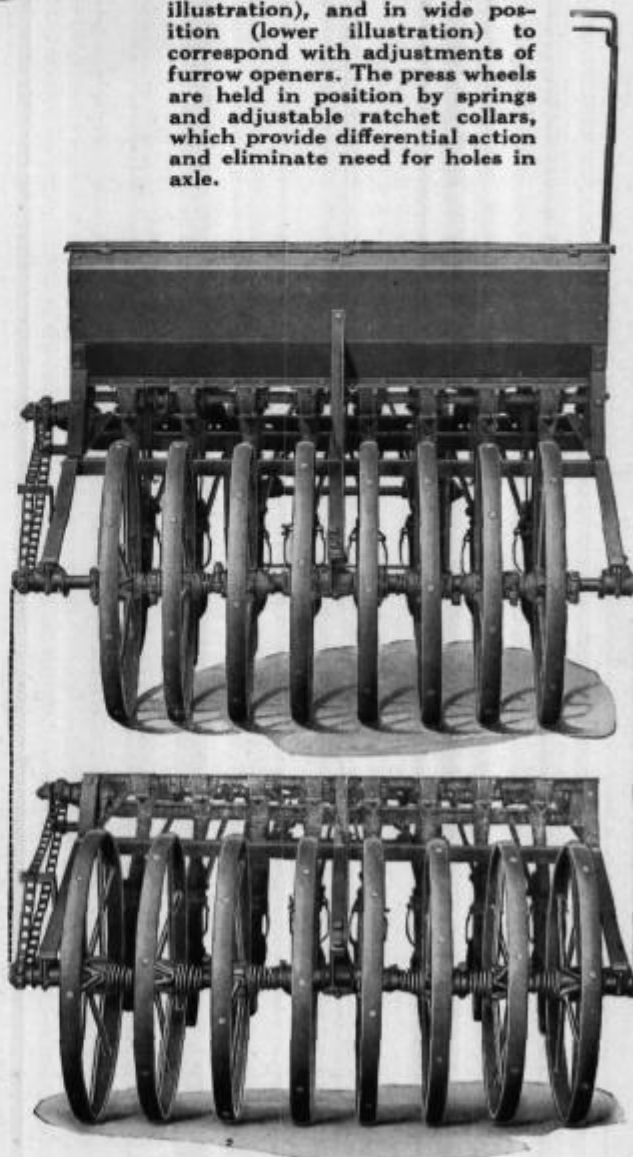
The press wheel axle bearings, also the forecarriage axle bearings, have replaceable chilled bushings. This simple construction makes it possible to remove or replace bushings without removing the entire gang assembly.

The drive chain is located outside the main frame. This prevents rocks or trash that might be carried up by the press wheels, from breaking the chain.



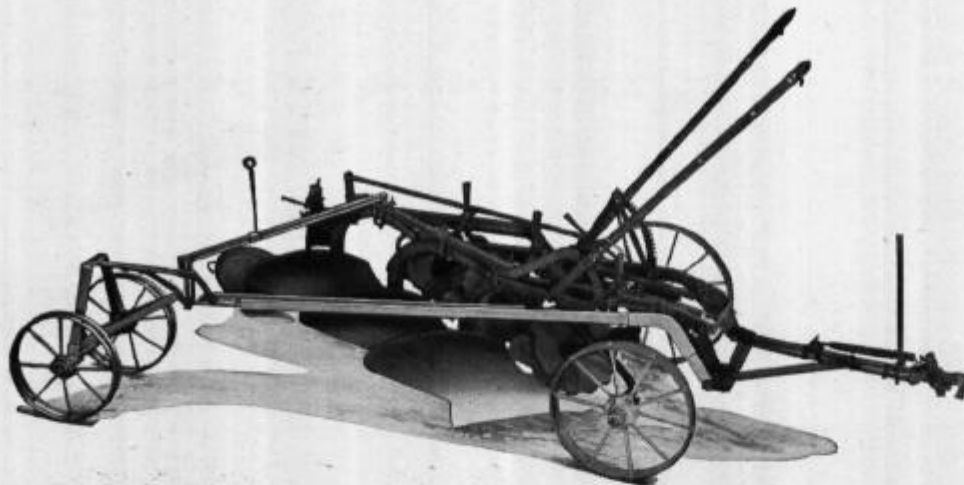
Illust. 3—The outside press wheel axle bearing (left) and the inside bearing (right) are designed so that the chilled bushing (center) can be replaced without removing the entire gang assembly.

Illust. 2—(below) Press wheels set in narrow position (upper illustration), and in wide position (lower illustration) to correspond with adjustments of furrow openers. The press wheels are held in position by springs and adjustable ratchet collars, which provide differential action and eliminate need for holes in axle.

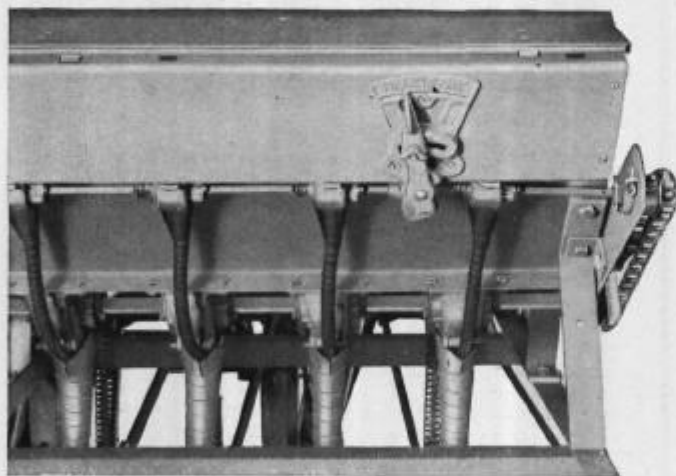


Adjustable Plow Press Drills

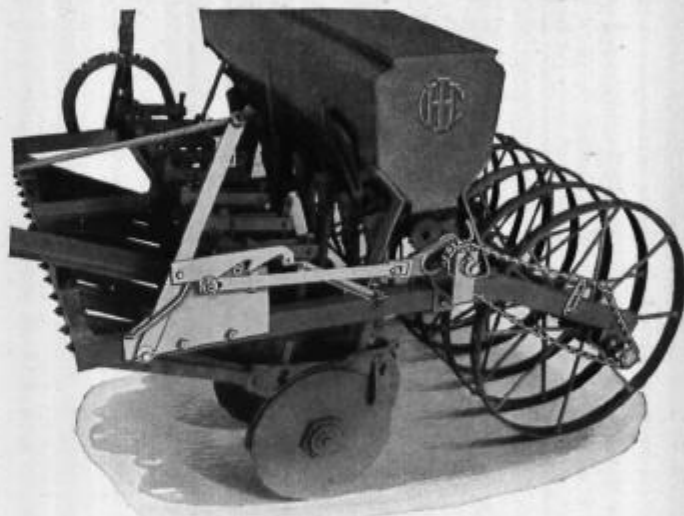
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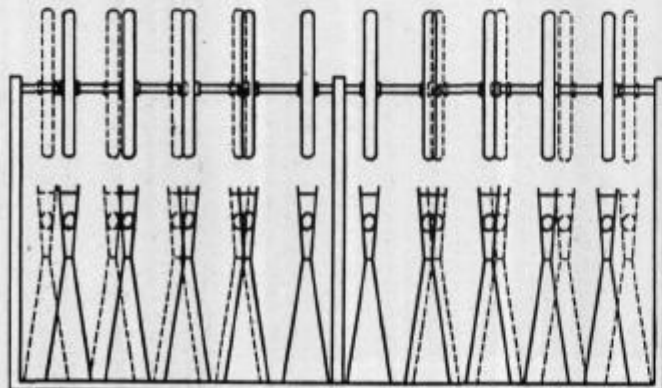
Illust. 1 — The plow press drill has an adjustable hitch which is pivotally connected to the plow drawbar, thus assuring control of draft. The hitch crossmember is pivotally attached to the plow rear beam brace and to the hitch draft member, permitting full flexibility and at the same time giving proper support to the draft member. The hitch fits any make of plow and works with either forecarriage or soil packer.



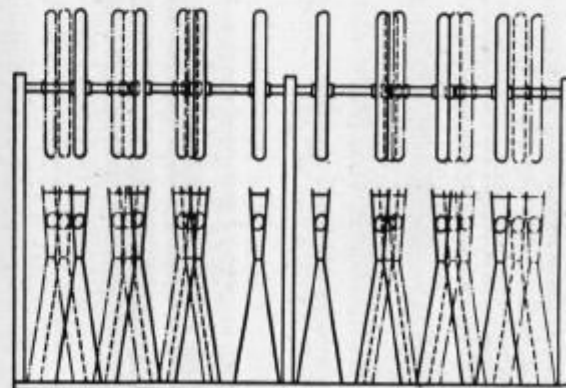
Illust. 2 — View of grass seed attachment for the plow press drill. The grass seed tubes are shown feeding into the grain tubes.



Illust. 4 — The convenient in-and-out-of-gear device is rope-controlled from the tractor seat. One pull on the rope engages the clutch, while a second pull disengages it.



Illust. 3 — Diagram showing how the 10-furrow plow press drill is adjustable to fit plowing widths of 57 1/2 and 60 inches behind plows with four 14-in. bottoms.

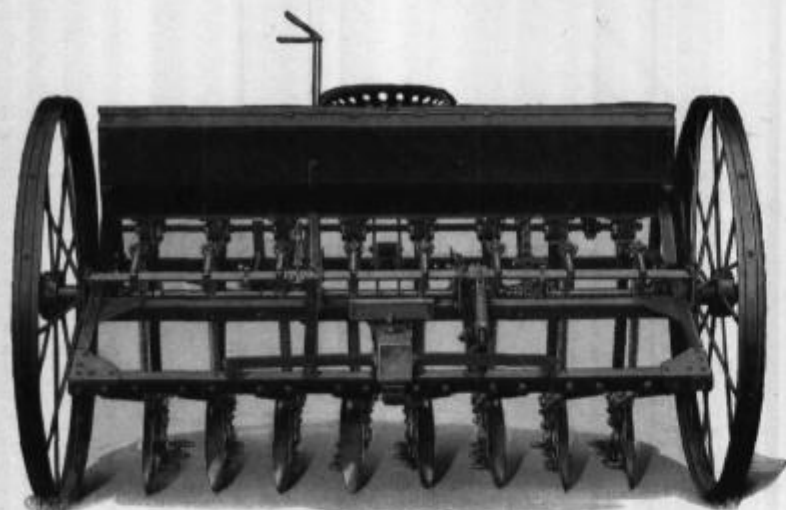


Illust. 5 — Diagram showing how the 8-furrow plow press drill is adjustable for seeding widths of 45, 48, and 51 inches behind plows with either three 14-in. or three 16-in. bottoms.



Type R Horse-Drawn Grain Drills

(Plain Type with Fluted Feed)



Illust. 1 — Type R, 8-8 size, horse-drawn plain drill with seat, rear center hand lift, and single-disk furrow openers.



Illust. 2 — Detail view showing one side of the 4-horse hitch as used on Type R horse-drawn drills.

Type R horse-drawn plain type grain drills with fluted feed are popular in all grain growing sections wherever this type of feed is used. They are built for long life and accurate seeding and are regularly supplied with seat, horse hitch, and a convenient rear center lever hand lift. The lever can be folded out of the way over the hopper for storage. At any time horse-drawn drills may be equipped with a tractor hitch for tractor operation. The fluted feed cup has an adjustable discharge gate which can be set in three different positions. This makes it possible to sow small, medium size, and large size seed with the same degree of accuracy.

- Accurate seeding with forced feed.
- Fluted feed roll has full-length bearing for easy turning.
- Discharge gate adjustable to three positions for small, medium and large size seeds.
- Large-capacity hopper holds feed mechanism in alignment.
- Convenient rear center hand lift with folding lever and horse hitch.

Regular Equipment

Furrow openers as specified. Steel or wood wheels. Seat. Horse hitch. Rear center hand lift. Covering chains with disk and shoe furrow openers. Pressure gun lubrication fittings.

Special Equipment

Grass seed attachment. Fertilizer attachment for 6-in. drills. Footboards.

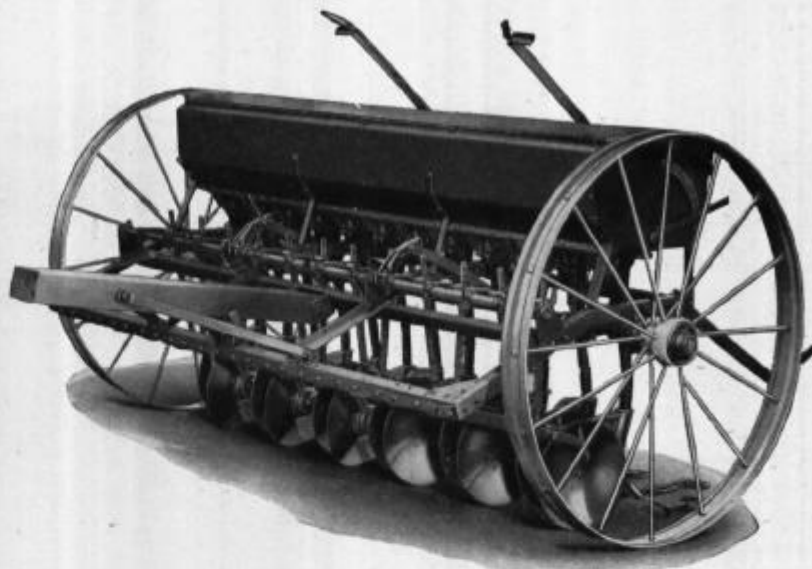
See also *Miscellaneous Attachments* page 174.

Sizes and Specifications

Drill Size	Pole	Hitch Supplied	Wheel Rim	Approximate Net Weight (Pounds)				
				Single Disk	Saw Blade Double Disk	Pin Hoe	Spring Hoe	Shoe
12-6	1	2-horse	3-in.	1051	1061	857	869	895
14-6	1	3-horse	3-in.	1136	1206	967	981	1010
16-6	2	3 and 4-horse	3-in.	1310	1390	1118	1134	1166
20-6	2	4-horse	4-in.	1548	1648	1308	1328	1366
22-6	2	4-horse	4-in.	1618	1728	....	....	1420
24-6	2	6-horse	4-in.	1798	1918	....	....	1582
10-7	1	2-horse	3-in.	886	936	766	776	796
11-7	1	3-horse	3-in.	963	1028	841	852	864
12-7	1	3-horse	3-in.	1072	1142	938	950	964
14-7	2	3-horse	3-in.	1222	1350	1194	1208	1242
16-7	2	4-horse	3-in.	1367	1447	1175	1191	1223
18-7	2	4-horse	4-in.	1529	1619	1313	1401	1367
8-8	1	2-horse	3-in.	801	841	705	713	729
12-8	1	3-horse	3-in.	1085	1145	941	954	977
16-8	2	4-horse	3-in.	1391	1471	1199	1215	1247

Type R Horse-Drawn Grain Drills

(Fertilizer Type with Fluted Feed)



Illust. 1 — Type R, 12-7 size, horse-drawn fertilizer grain drill with fluted feed, rear center hand lift levers, and single-disk openers.

Type R horse-drawn fertilizer grain drills with fluted feed are widely used in grain growing sections where it is desired to apply fertilizer at the time of seeding. These drills increase profits because of higher yields and seed and fertilize the crop at the same time with a minimum of labor.

The fluted feed provides an even flow of seed regardless of the amount of grain in the hopper and the amount of fertilizer can be closely regulated according to the user's need. The fertilizer feed can be thrown off or on, and the quantity easily and quickly changed while the drill is in motion.

Regular Equipment

Furrow openers as specified. Hopper with separate compartments and feeds for grain and fertilizer. Steel or wood wheels. Seat. Horse hitch. Rear center hand lift. Covering chain with disk and shoe furrow openers. Pressure gun lubrication fittings.

Special Equipment

Grass seed attachment. Footboards.
See also *Miscellaneous Attachments* page 174.

- Accurate seeding with forced feed.
- Discharge gate adjustable to three positions for small, medium and large size seeds.
- Easy running grain and fertilizer feeds assure light draft.
- Sows 30 to 1135 pounds of commercial fertilizer to the acre.
- All fertilizer parts accessible for convenient cleaning and adjustment.

Sizes and Specifications

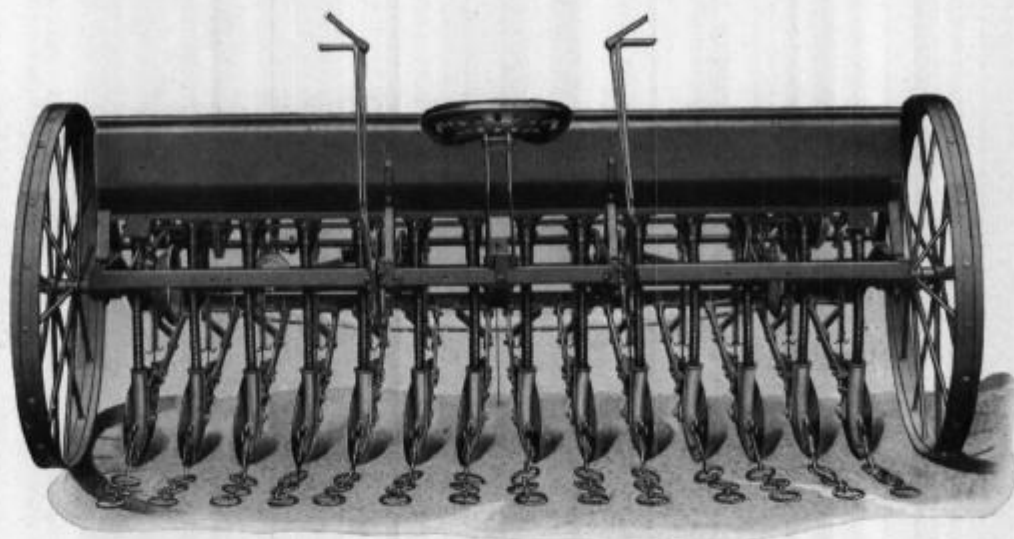
Drill Size	Pole	Hitch Supplied	Wheel Rim	Approximate Net Weight (Pounds)					
				Single Disk	Saw Blade Double Disk	Curved Blade Double Disk	Pin Hoe	Spring Hoe	Shoe
9-7	1	2-horse	3-in.	974	1019	1001	866	875	897
10-7	1	2-horse	3-in.	1047	1097	1077	927	937	957
11-7	1	2-horse	3-in.	1120	1175	1153	988	999	1021
12-7	1	3-horse	3-in.	1231	1289	1275	979	991	1012
13-7	1	3-horse	3-in.	1333	1398	1372	1177	1190	1216
16-7	2	4-horse	5-in.	1663	1743	1661	1271	1287	1519
8-8	1	2-horse	3-in.	932	972	956	836	844	860
9-8	1	2-horse	3-in.	1010	1054	1036	901	910	928
10-8	1	2-horse	3-in.	1083	1133	1113	933	943	993
12-8	1	3-horse	3-in.	1254	1314	1290	1110	1122	1146
16-8	2	4-horse	5-in.	1645	1725	1693	1453	1469	1571



Type R Horse-Drawn Grain Drills

(Plain Type with Double-Run Feed)

Illust. 1—Type R, 14-7 size, horse-drawn plain type drill with double-run feed, rear center hand lift levers and single-disk furrow openers.



Type R horse-drawn plain grain drills with double-run feed have long been used in many wheat growing sections and also where it is customary to plant a variety of large and small seeds such as soybeans, peas, lima beans and even corn in addition to small grains. These drills are regularly equipped with seat, horse-hitch and a convenient rear center, hand lift. The levers for this lift can be folded out of the way over the hopper for storage. These drills may be equipped with a tractor hitch at any time the user desires.

The double run feed cup is really two feeds in one as it has a small opening on one side for small seeds and a large opening on the other side for larger seeds. The feed wheels and the feed cups are carefully made and close fitted for accuracy in sowing.

- Most accurate double-run feed built.
- Ten speed changes provided without change of sprocket.
- Factory mounted speed transmission unit has all parts in perfect alignment.
- Flexible angle—steel frame for great strength and long life.
- Convenient rear center hand lift with folding lever and horse hitch.

Regular Equipment

Furrow openers as specified. Steel or wood wheels. Seat. Horse hitch. Rear center hand lift. Covering chains with disk and shoe furrow openers. Pressure gun lubrication fittings.

Special Equipment

Grass seed attachment. Fertilizer attachment for 6-inch drills. Footboards.

See also *Miscellaneous Attachments* page 174.

Sizes and Specifications

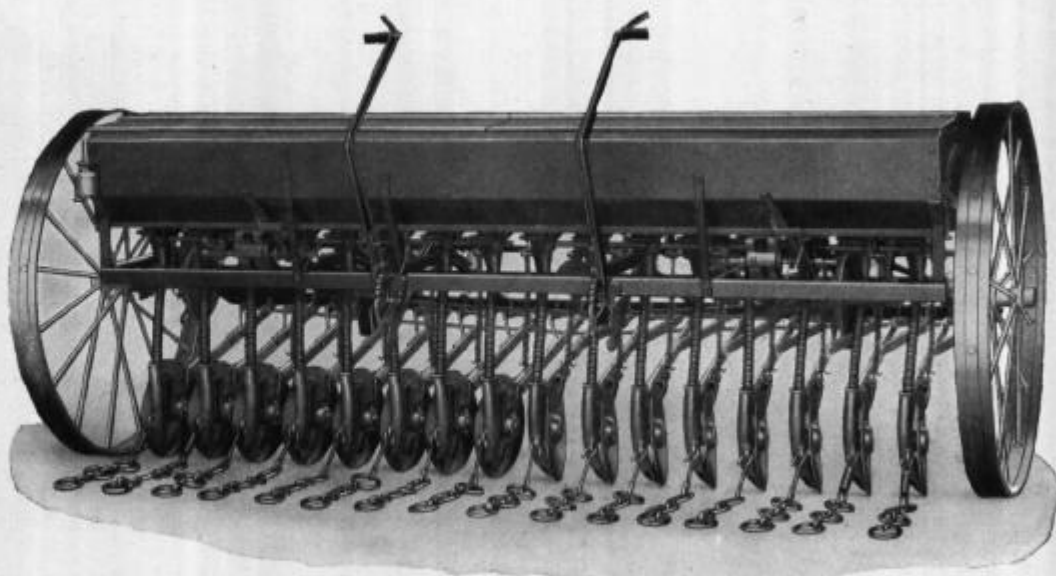
Drill Size	Pole	Hitch Supplied	Wheel Rim	Net Weight (Approx.)—Lb.				
				Single Disk	Saw Blade Double Disk	Pin Hoe	Spring Hoe	Shoe
12-6	1	2-horse	3-in.	1053	1113	909	921	945
14-6	1	3-horse	3-in.	1199	1269	1031	1045	1073
16-6	2	3 and 4-horse	3-in.	1380	1460	1188	1204	1236
20-6	2	4-horse	4-in.	1618	1718	1378	1398	1436
22-6	2	4-horse	4-in.	1698	1808	....	....	1500
24-6	2	6-horse	4-in.	1868	1988	....	....	1652
10-7	1	2-horse	3-in.	920	970	800	810	830
11-7	1	2-horse	3-in.	1008	1063	876	887	909
12-7	1	3-horse	3-in.	1117	1177	973	985	1009
14-7	2	3-horse	3-in.	1269	1399	1101	1115	1143
16-7	2	4-horse	3-in.	1435	1515	1243	1259	1291
18-7	2	4-horse	4-in.	1588	1678	1372	1380	1426
8-8	1	2-horse	3-in.	828	868	732	740	756
12-8	1	3-horse	3-in.	1139	1199	995	1007	1031
16-8	2	4-horse	3-in.	1469	1549	1277	1293	1325



Type R Horse-Drawn Grain Drills

(Fertilizer Type with Double-Run Feed)

Illust. 1 — Type R, 16-7 size, horse-drawn fertilizer grain drill with double-run feed, rear center hand lift levers, and single-disk openers.



- Most accurate double run feed built.
- Ten speed changes provided without change of sprocket.
- Sows from 30 to 1135 pounds of commercial fertilizer to the acre.
- Easy-running grain and fertilizer feeds assure light draft.
- Convenient rear center hand lift with folding lever and horse hitch.

Type R horse-drawn fertilizer grain drills with double-run feed are leaders in those sections which desire this general-purpose type of feed in a fertilizer drill. Growers of small grain and also of soybeans, peas, lima beans, and in some sections even corn, profit by the sowing of both seed and fertilizer at the same time with these drills.

The large-capacity, rust-resisting, galvanized hopper is designed for strength and to assure easy-running feeds. There is sufficient range of adjustment for almost any desired application of nitrate, superphosphate, or complete fertilizers. No tools are required to remove parts for cleaning and all parts are accessible for easy adjustment.

Regular Equipment

Furrow openers as specified. Hopper with separate compartments and feeds for grain and fertilizer. Steel or wood wheels. Seat. Horse hitch. Rear center hand lift. Pressure gun lubrication fittings.

Special Equipment

Grass seed attachment. Footboards.
See also *Miscellaneous Attachments* page 174.

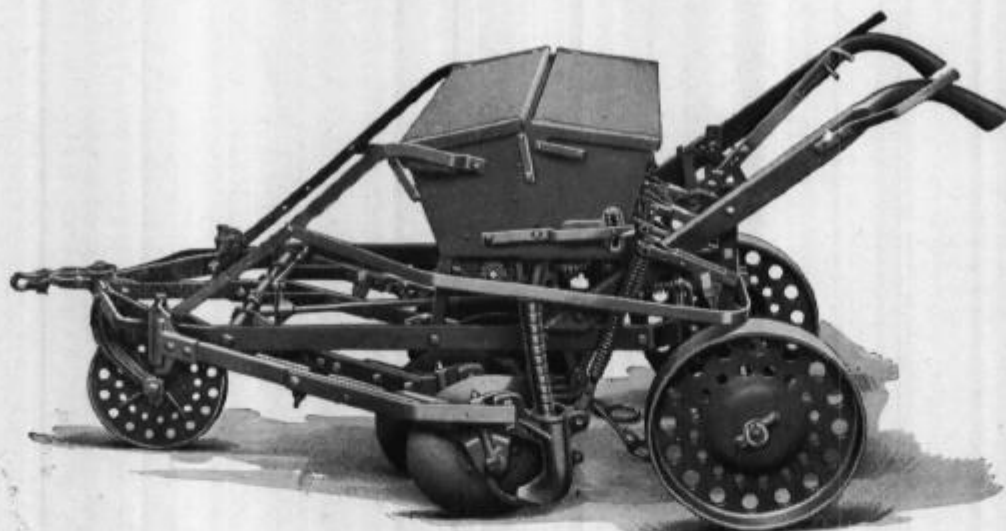
Sizes and Specifications

Drill Size	Pole	Hitch Supplied	Wheel Rim	Net Weight (Approx.) — Lb.					
				Single Disk	Saw Blade Double Disk	Curved Blade Double Disk	Pin Hoe	Spring Hoe	Shoe
9-7	1	2-horse	3-in.	1003	1048	1030	895	904	922
10-7	1	2-horse	3-in.	1081	1131	1111	961	971	991
11-7	1	2-horse	3-in.	1146	1201	1179	1014	1025	1047
12-7	1	3-horse	3-in.	1264	1324	1300	1120	1132	1156
13-7	1	3-horse	3-in.	1382	1447	1421	1226	1239	1265
16-7	2	4-horse	5-in.	1730	1810	1728	1538	1554	1586
8-8	1	2-horse	3-in.	962	1002	986	866	874	890
9-8	1	2-horse	3-in.	1039	1084	1066	931	940	958
10-8	1	2-horse	3-in.	1113	1163	1143	993	1003	1023
12-8	1	3-horse	3-in.	1308	1368	1344	1164	1176	1200
16-8	2	4-horse	5-in.	1723	1803	1771	1531	1547	1579



One-Horse, 5-Disk Grain Drills

(Plain and Fertilizer)



Illust. 1 — One-horse, 5-disk drill, fertilizer type.

The one-horse 5 disk grain drill is designed for seeding between rows of standing corn or cotton and may also be used for drilling small fields of grain, peas, beans, etc. It contains the basic features found in the larger grain drills and does the same high-grade work. The 5-disk drill is available in either plain or fertilizer type, the two being essentially alike except that the fertilizer drill will distribute any standard commercial fertilizer, in quantities of 75 to 640 pounds per acre, at the same time the seed is sown. The amount distributed by the star-type fertilizer feed is regulated by a gate lever on the side of the hopper and by adjusting the feed shaft to either *fast* or *slow* speed.

Features

The fluted-force feed sows many kinds of grains and seeds customarily handled by a grain drill. Quantities sown are accurately regulated by a lever.

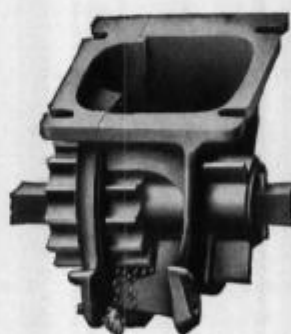
Driving mechanism—The two drive wheels have ratchet hubs, assuring continuous seeding while turning. Power is transmitted through a chain and sprocket drive having an automatic clutch which engages and disengages automatically as the openers are lowered or raised.

The single-disk furrow openers are adjustable by means of a convenient lever for 6, 7, or 8-inch spacings. This permits always seeding the full space between the corn rows regardless of the width at which they were planted.

Pressure springs hold each disk to its work and regulate the depth of seeding. The pressure springs are individually adjustable to suit the contour of the ground—a desirable feature where corn has been hilled or cultivated so as to leave ridges.

Stalk guards are provided on each side to protect the tubes from fallen stalks.

Wheels—The front caster wheel, together with the two drive wheels set wide apart at the rear, form a triangular support which gives good stability to the drill.



Illust. 2 — Fluted force-feed set to sow a small quantity per acre.

Special Equipment

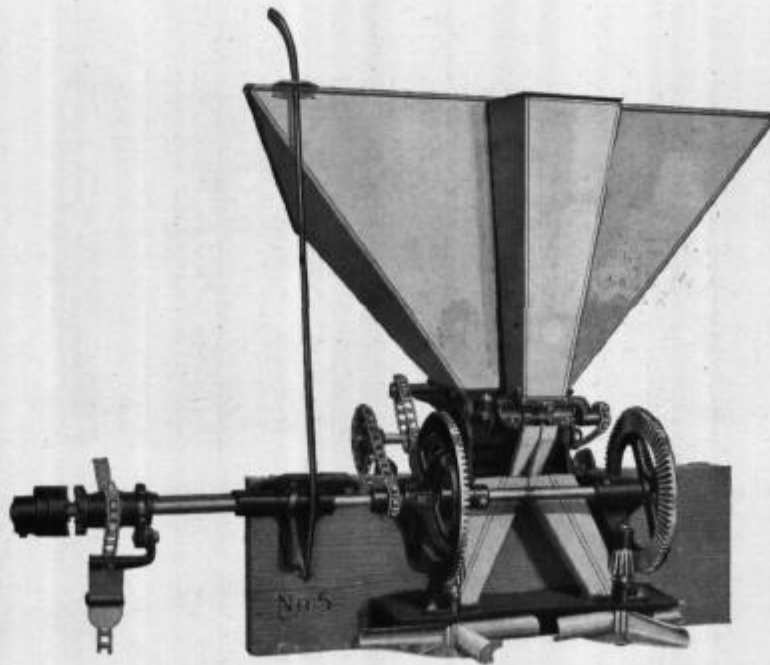
Grass seed attachment. Grain agitator. Fertilizer agitator. Wheel scrapers. Hitch and stalk guard attachment.*

*Consists of special hitch parts to hold the caster wheel in line of pull and extra stalk guards to give additional protection to tubes in fallen corn.

Weights and Specifications

Description	Net Weight (Approx.)
One-horse, 5-disk drill, plain type.....	326 lb.
One-horse, 5-disk drill, fertilizer type.....	390 lb.
Grass seed attachment.....	21 lb.
Grain agitator.....	5 lb.
Fertilizer agitator.....	7 lb.
Hitch and stalk guard attachment.....	9 lb.

No. 5 Endgate Seeder



Illust. 1 — The No. 5 endgate seeder sets in the rear end of the wagon box and is chain-driven from a sprocket attached to the wagon wheel.

The No. 5 endgate seeder provides an inexpensive method of broadcasting seed quickly and easily. Its width of distribution for oats is from 36 to 40 feet; wheat, 42 to 52 feet; flax, 20 to 26 feet; timothy, 20 to 24 feet; and clover, 24 to 28 feet. The large-size feed runs are of the fluted force-feed type and assure the proper amount of seed delivered to the fans. The speed at which the seeder should be operated is from $2\frac{1}{2}$ to 3 miles per hour. The hopper is made of heavy-gauge steel. It is rectangular in shape for easy filling with a shovel and slants downward toward the wagon box to prevent spilling. The driving gears are meshed to just the right depth, thus eliminating wear. The drive shaft is heavy cold-rolled steel.

Regular Equipment

Drive sprocket for use with non-demountable rim type disk wheels with 6.00 x 16-in. pneumatic tires.

Special Equipment

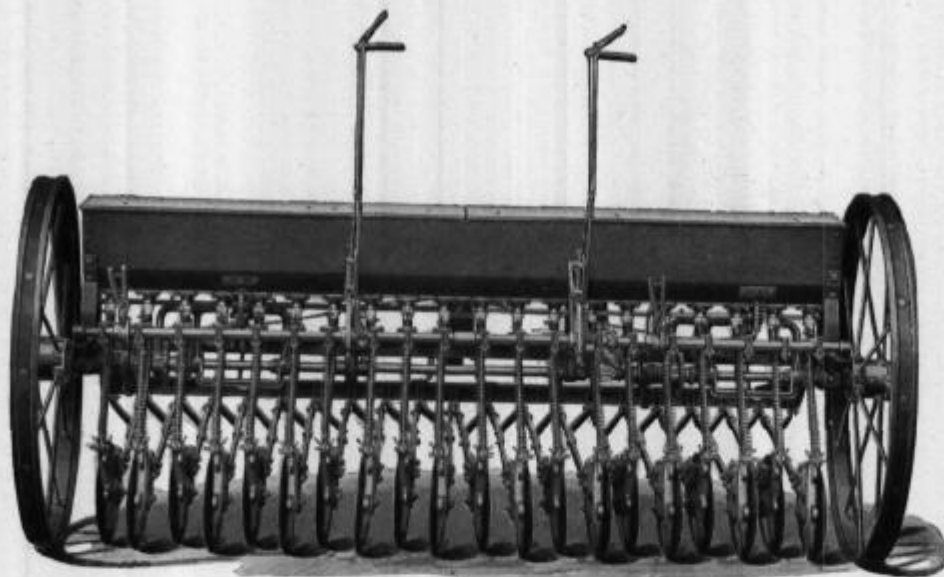
Drive sprockets, as specified, for 44, 48 and 50-in. wood wagon wheels; 34-in. steel wheels (all-purpose truck); 6.00 x 16-in. pneumatic tire wheels with demountable rims (tractor trailer). Grass seed attachment.

Specifications

Model	Description	Net Weight (Approx.)
No. 5	Endgate seeder.....	140 lb.
.....	Grass seed attachment.....	10 lb.



Alfalfa and Grass Seed Drill



Illust. 1 — The alfalfa and grass seed drill has 20 single-disk furrow openers spaced 4-inches apart.

This drill is particularly designed for sowing all kinds of small seeds such as alfalfa, clover, red top, timothy, blue grass, rape, millet, flax, hemp, etc. It will also sow wheat. The dependable double-run feed handles any of these seeds evenly and economically in quantities varying from $1\frac{1}{2}$ to 169 pounds per acre, depending upon the seed used and quantity desired. Many owners use the drill for reseeding old meadows and pasture lands—sowing direct without preliminary seed bed preparation.

Features

Hopper—All steel, rust-resisting. Capacity $2\frac{1}{4}$ bushels.

Double-Run Feed—Similar in principle to that on grain drills but with smaller feed wheels and cups. Close-fitting covers shut off either side not in use.

Speed Transmission—Spur gear, selective type, provides 24 different speeds for a wide range of quantity adjustments for all kinds of small seeds.

Openers—Special single-disk type with closed delivery boot. Disks are 11-in. diameter, spaced 4 inches apart and set in zig-zag rank. Adjustment of undercut is provided.

Hand Lift—Two rear lifting levers are provided.

Equipment

Regular—Pole and 2-horse wood evener.

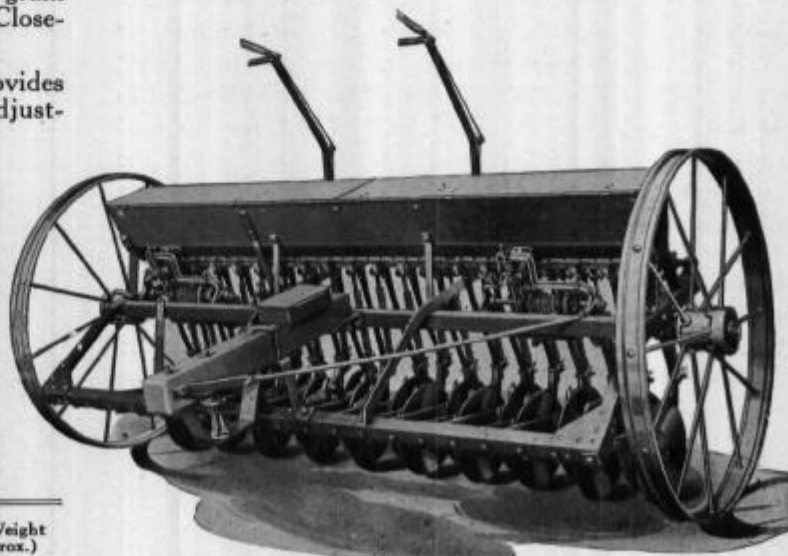
Special—Tractor hitch. Covering chains.

Weights and Specifications

Size	Description	Net Weight (Approx.)
20-4	Alfalfa and Grass Seed Drill.....	850 lb.
	Tractor hitch (special).....	35 lb.
	Covering chains (special).....	48 lb.



Illust. 2 — A tractor hitch, adjustable for height, is available as special equipment. Illustration shows how hitch is attached to frame.



Illust. 3 — Front view of the alfalfa and grass seed drill, showing the two spur-gear speed transmissions which drive the double-run feed.



PLANTERS

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Trailing and Tractor-Mounted Corn Planters

Features and Equipment

- A planter for every soil condition and planting practice.
- Ruggedly constructed for higher tractor speeds.
- High-speed boots — accurate planting at speeds up to 120 buttons per minute.
- Versatile seed hoppers — plant wide variety of crops.
- Variable drop — to vary the number of kernels per hill and total population of kernels per acre.
- Rugged, dependable clutch.
- Fertilizer attachments — for higher yields.

There is an IH corn planter for practically every soil condition and planting practice. Whether it is two or four-row tractor-trailing . . . two-row tractor-mounted . . . or two-row horse-drawn . . . it is available in any one of three main types: a versatile, three-purpose checkrow planter fully equipped for checkrow, power hill-drop and drill planting; a two-purpose, economical power hill-drop planter for power hill-drop and drill planting . . . identical to the checkrow planter but without checkheads, reeling unit, checkwire and stakes; and a simple, inexpensive planter for drill planting . . . having the same general construction as the other machines, but with a shorter front frame, drill boots in place of high-speed boots, and without checkheads, checkshaft, reeling unit, checkwire and stakes.

Rugged Construction

These planters are built to stand up under the strain of high-speed operation. Rugged construction keeps the frame free from twisting when the planter is working in rough soil and keeps all working parts in perfect

alignment, free to work at all times. The weight of the entire planter holds the furrow openers in the ground. Because all openers are firmly attached to the rigid frame there is no tendency for the openers to wobble independently of each other and lead off to one side. On trailing planters the axles are made of special steel — giving longer life free from breakage. The axle boxes have chilled iron half-sleeves which can be replaced easily should they wear after years of service.

High-Speed Boots

Checkrow and power hill-drop planters are regularly equipped with high-speed boots that assure accurate planting at high tractor speeds . . . at rates up to 120 buttons a minute . . . 480 hills a minute with a four-row planter.

The construction is durable, yet simple. The boot consists of a one-piece valve, a plunger, and the boot housing. Gray iron castings guard against "freezing" and failure due to rust, and assure smooth operation for many years of trouble-free service.

The dependable operation of the boot mechanism contributes a great deal to the accuracy of planting. Each hill of 2, 3 or 4 kernels passes through four distinct steps from the time it leaves the seed plate until it is firmly planted in the ground. The action of the valve and plunger prevents mixing of hills within the boots . . . with the result that planted hills contain the exact number of kernels desired . . . are compact . . . and are spaced at the proper distance. Illustrations 1, 2, 3 and 4 on the next page show cut-away views of the high-speed boots and illustrate, step-by-step, how the positive action of the valve and plunger keeps the hills from mixing in checkrow and power hill-drop planting. Illustration 5 shows the boot with the valve locked in an open position for drill planting.

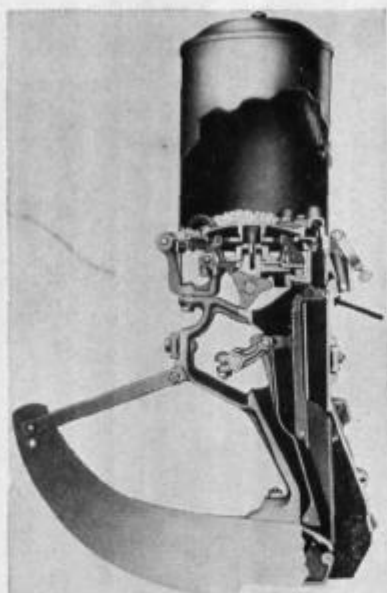
Trailing and Tractor-Mounted Corn Planters

MACHINE	Checkrow Planter	Power Hill Drop Planter	Drill Planter
Tractor Trailing Planters			
Two-Row	No. 240	No. 242	No. 241
Four-Row	No. 440	No. 442	No. 441
Tractor-Mounted Planters			
For Farmall Super-A with Farmall Touch-Control	A-218	A-222	A-219
For Farmall C with Farmall Touch-Control	C-220	C-222	C-221
For Farmall A	A-210	A-212	A-211
For Farmall B	B-210	B-212	B-211
For Farmall BN	BN-210	BN-212	BN-211
For Farmall H	H-210	H-212	H-211
For Farmalls M and MD	M-210	M-212	M-211
Horse-Drawn Planters			
Two-Row	No. 202	No. 205	No. 203

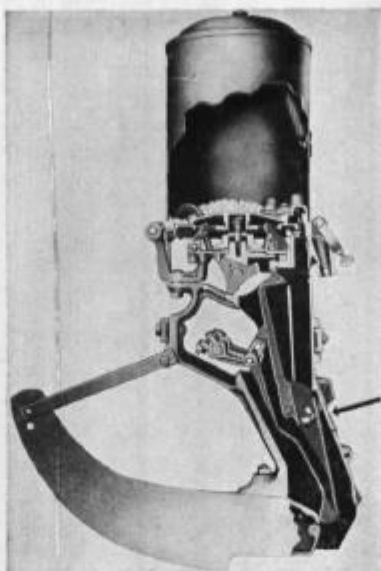


Trailing and Tractor-Mounted Corn Planters

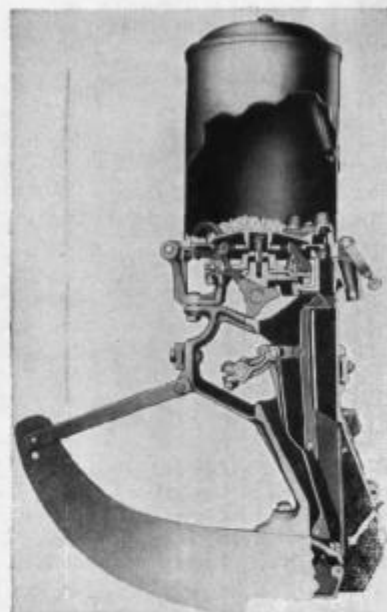
Features and Equipment (Continued)



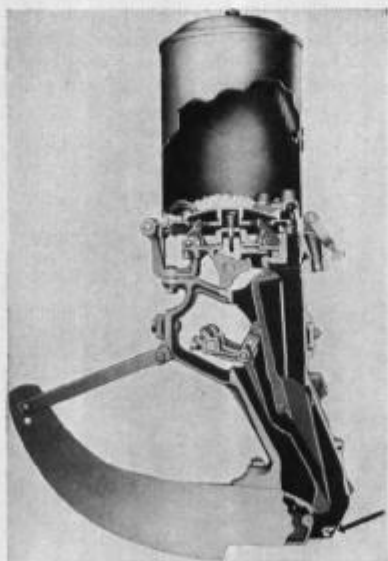
Illust. 1 — The kernels travel from the seed plate to the "V"-shaped top valve where they are accumulated without bouncing. This is step No. 1.



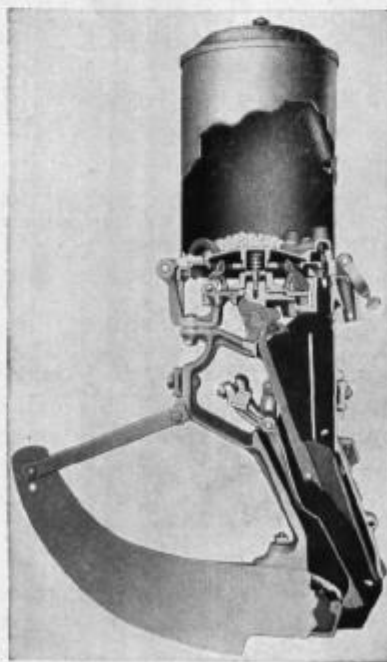
Illust. 2 — When the valve is opened by the action of the checkshaft, the kernels fall through a smooth-walled passage and are temporarily halted in the "V"-shaped pocket formed by the valve wall and plunger . . . step No. 2.



Illust. 3 — As the valve pivots and closes the top of the passage, the kernels are moved into the "V"-shaped pocket below the plunger where they are held . . . step No. 3.



Illust. 4 — The plunger ejects the kernels, placing them in the soil in a compact hill . . . step No. 4. By this time the kernels for another hill are passing through these same steps and will be ready to be planted when the planter has moved far enough forward.

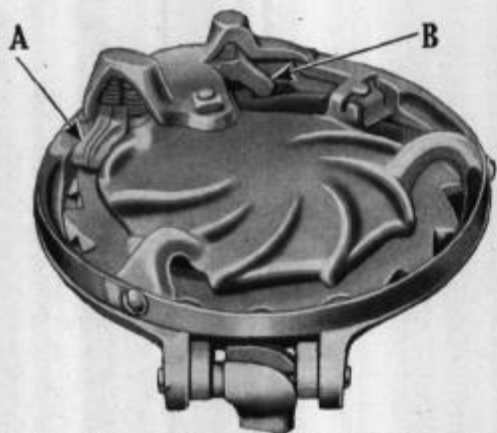


Illust. 5 — In drill planting the valve is locked in the open position, providing a clear passage through which single kernels pass at regular intervals.

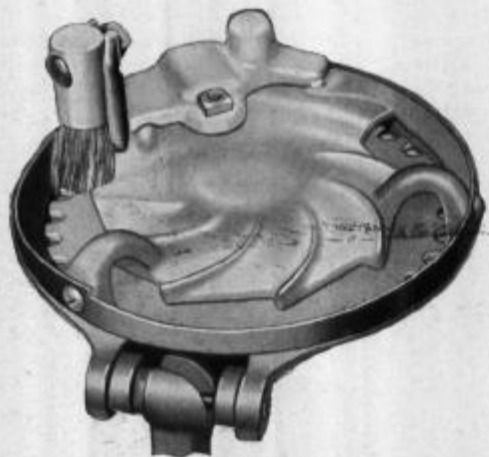


Trailing and Tractor-Mounted Corn Planters

Features and Equipment (Continued)



Illust. 1 — Double cut-off pawls "A" make it possible to use three types of seed plates, edge-drop, flat-drop and hill-drop in the same hopper. They allow only the seeds in the cell to pass over the boot opening. The knock-out pawl "B" automatically clears each cell as it passes over the boot opening.

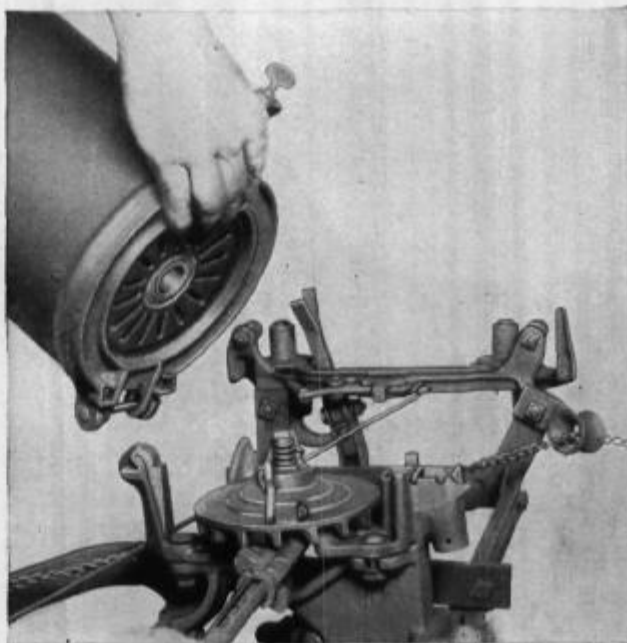


Illust. 2 — A brush cut-off is available as special equipment for use with seed plates for small tender seeds.

Hoppers Are Easy To Remove

The seed hoppers are constructed so they may be removed completely without using tools. This makes it easy to empty the hoppers, change seed plates, inspect the hopper mechanism, or exchange hoppers. The easy removal of hoppers is a great convenience and time saver to growers of hybrid seed corn who wish to use separate hoppers for different types of seed. The moisture-proof lids are held in position by tension springs, preventing seed from spilling out even when the hopper is lying on its side or held upside down. When filling or emptying the hopper the lid can be easily moved to one side, where it is held in position by the tension spring — no lost lids. The hopper bottom ring, which holds the seed plate in position, is held firmly in

position by a pair of springs — no possibility of seed spilling from the bottom of the hopper while the hopper is being removed. The springs can be easily depressed when swinging back the hopper ring to remove the seed plate after the hopper is removed from the planter.



Illust. 3 — Removing the hopper is easy . . . and requires no tools. Just loosen the thumbscrew clamp at the bottom of the hopper . . . turn the hopper in the slotted hinge . . . and lift the hopper off the planter. This is a great convenience for changing seed plates, emptying hoppers, inspecting cut-off and knock-out pawls, and exchanging hoppers.



Illust. 4 — To change seed plates just remove the hopper . . . set it on end . . . lift up the hopper ring . . . and remove the plate. An edge-drop plate is shown here.



Trailing and Tractor-Mounted Corn Planters

Features and Equipment (Continued)

Seed Plates for Wide Variety of Crops

Three basic types of seed plates — edge-drop, flat-drop, and full hill-drop — are available with assorted cell sizes and cell spacings for use in regular corn hoppers. This feature enables the operator to plant any size and shape of hybrid seed corn and a wide variety of other seeds ranging from small tomato seeds to large lima beans.



Illust. 1 — Edge-drop plates are for planting graded seed, both hybrid and open-pollinated. With this type of plate one seed stands on edge in each cell.



Illust. 2 — The flat-drop plate is best suited for ungraded, open-pollinated corn, and some shapes of hybrid corn. Thinner than edge-drop and full hill-drop plates, these plates require a filler ring.



Illust. 3 — The full hill-drop plate has larger cells and gathers several seeds in each cell. It is well adapted to the planting of ungraded corn and irregularly shaped seeds, as well as butt and tip kernels of hybrid corn.

Grooved Hopper Bottom Plate

When planting at high tractor speeds is practical, hills may occasionally contain less than the desired number of kernels even though the proper seed plate is used. This is usually due to the fact that some kernels are oversize and are being kicked out of the cells by the cut-off pawls. A grooved hopper bottom plate is available as special equipment and is recommended for use with an edge-drop plate when planting medium or large kernels of corn at high tractor speeds. In effect, this grooved plate increases the depth of each cell and permits large kernels, which might normally project above the surface of the seed plate, to settle into the groove and pass under the cut-off pawls. This eliminates

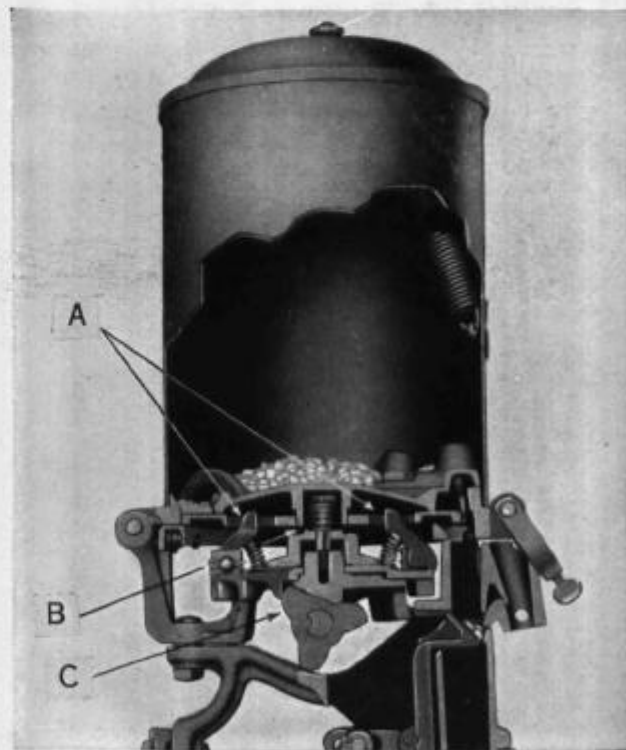
the possibility of the kernels being flipped out of the cells as they pass under the cut-off pawls.

Smooth Action for Precision Planting

The seed plate rotates on a heavy bearing which keeps the plate accurately centered, holding the width of the cells uniform and free to collect seeds. The extra large diameter of the seed plate gives the cells a greater distance to travel — more time for the seed to settle into the cells. The smooth action of the seed plate driving mechanism permits the seeds to settle firmly in each cell — no jolting of seeds from the cells.

The Planter Can Never Get Out of Time

The seed plate drive gear has 16 teeth, corresponding in number to the cells in most seed plates, and each seed plate has sixteen slots for engagement with the driving pawls. As a result, each rotation of the drill shaft and pinion advances the proper number of cells over the boot opening, in perfect timing with the action of the high-speed boots.

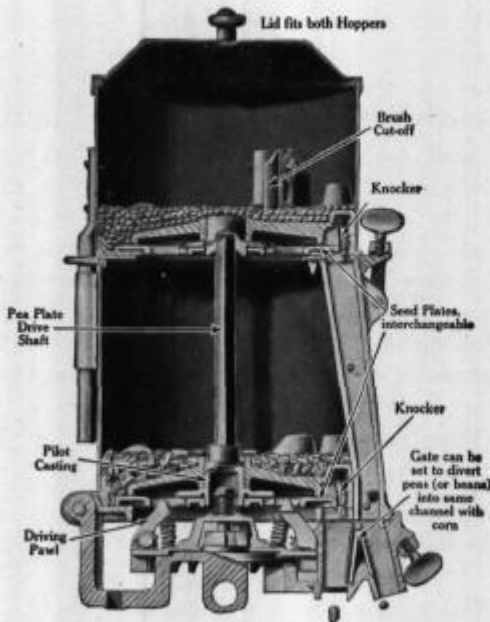


Illust. 4 — Cross-section view of hopper and seed plate driving mechanism. "A" shows the spring-cushioned pawls which drive the seed plate. If, when placing the hopper in position, the pawls should strike between the slots in the plate, the springs allow the pawls to be depressed until they have traveled far enough to spring into the slots — eliminating breakage. "B" shows the heavy, precision-machined center bearing which keeps the seed plate accurately centered. "C" shows the variable drop pinion (set for 3 cells to empty into the boot every revolution of the drill shaft).



Trailing and Tractor-Mounted Corn Planters

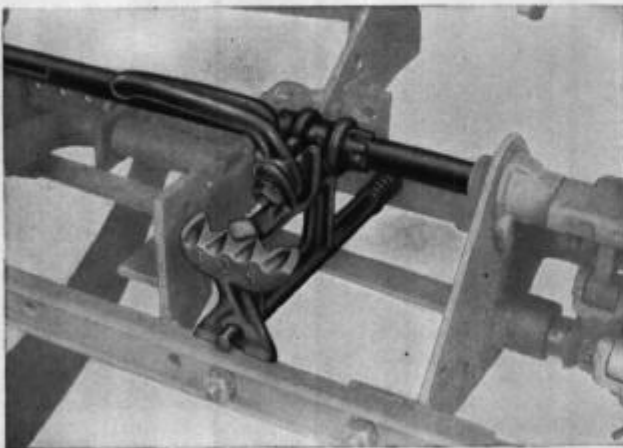
Features and Equipment (Continued)



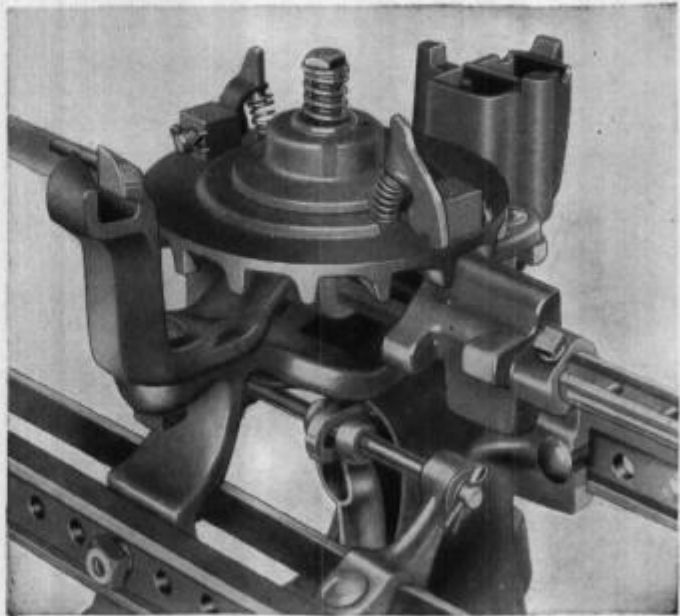
Illust. 1 — A combination corn and pea attachment is available as special equipment and makes it possible to plant two kinds of seed at the same time. Peas or beans may be dropped in the hill with the corn, or they may be drilled through separate steel spouts. Pea attachments are also available to adapt corn hoppers for planting two kinds of seed at the same time.

Exactly 2, 3 or 4 Kernels In Every Hill

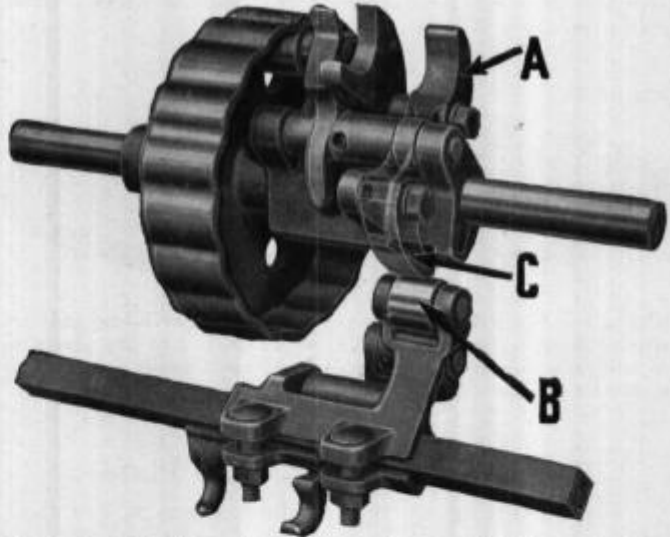
The variable drop seed plate drive permits a quick change for planting exactly 2, 3 or 4 kernels per hill in checkrow and power hill-drop planting and offers a choice of drilling distances. This action applies to all series of planters for the Corn Belt except the C-220 and C-222 planters for the Farmall C Tractor with Farmall Touch-Control.



Illust. 2 — This hand lever shifts the position of the variable drop pinion and controls the number of cells that empty into the boot during one revolution of the drill shaft. It is easy to shift and is conveniently located.



Illust. 3 — The variable drop pinion is attached to the drill shaft and smoothly engages the seed plate gear during each revolution of the shaft. This action causes 2, 3 or 4 cells in the seed plate (with a 16-cell plate and depending on the variable drop setting) to pass over the boot opening where the seeds are ejected into the boot.



Illust. 4 — Clutch on checkrow and power hill-drop planters, together with a section of the checkshaft. In this view, parts are set for power hill-drop planting. Dog "A," which revolves continuously, strikes roller "B," thereby causing the boot mechanism to plant one hill for every revolution of the drill shaft.

For checkrow planting the dog "A" is moved to position "C" where it is inoperative. The left-hand roller (shown behind roller "B") is in contact with the left-hand dogs, keeping the clutch disengaged. Each time a button strikes the checkfork and trips the checkshaft the dogs are released. This action engages the clutch, causing the drill shaft to make one full revolution — advancing the seed plate 2, 3 or 4 cells (with 16-cell plate), depending on the variable drop setting.



Trailing and Tractor-Mounted Corn Planters

Features and Equipment (Continued)

Rugged, Dependable Clutch

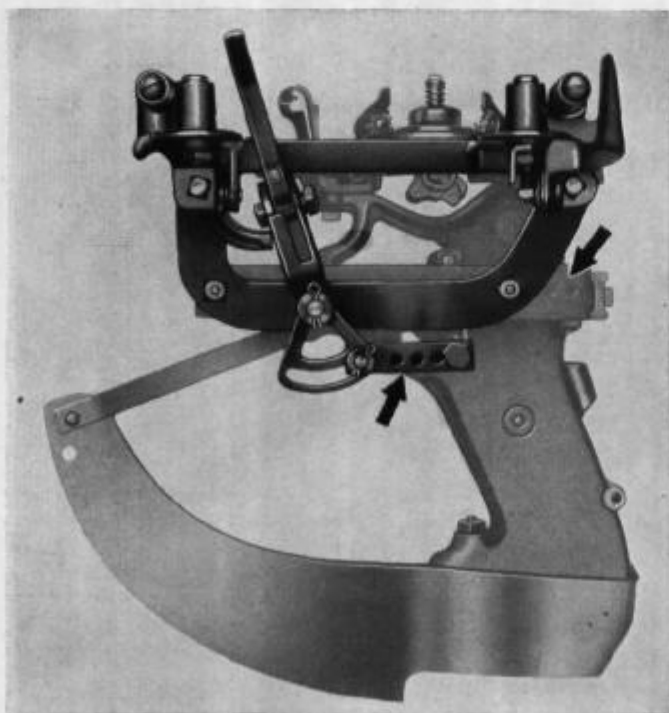
The durably constructed clutch on checkrow and power hill-drop planters operates accurately and dependably at all times. It is out in the open where it may be reached easily for inspection and changing for power hill-drop or checkrow planting. It requires no lubrication. The steel rollers are extra wide, have extremely hard surfaces, and rotate on hardened steel pins which are set in extra long bearings. The C-220 and C-222 planters for the Farmall C Tractor have no clutch.

Adjustable Checkheads for Accurate Cross-check

Adjustable checkheads on all checkrow planters permit changing the position of the drop without tilting the frame and boots. The rollers and the checkfork are ruggedly built of hardened steel to prevent wear and eliminate the possibility of checkwire buttons catching and breaking the wire. The checkwire is automatically released when the planter is raised at the end of the row for turning. The wide opening at the top of the checkfork permits easy threading.

Fertilizer Attachments

Fertilizer attachments, designed in accordance with



Illust. 1 — Adjustable checkheads can be moved forward or backward to correct variations in cross-check. Four settings are available, as indicated by arrows, to change the position of the drop in relation to the button on the checkwire.

Illust. 2 — Power hill-drop planters have blank checkheads. In this view, the checkshaft is latched in position to keep the boots open for drill planting.



the most efficient methods of applying fertilizer, are available for all corn planters. The large capacity hoppers, supplied regularly on fertilizer attachments for all machines except the horse-drawn planters, are the star-feed type which delivers a constant and even stream of fertilizer. Three sizes of star-feed wheels are available, permitting delivery rates from 45 to 1000 pounds per acre. A conveniently located lever and 40-position quadrant assure accurate control of the quantity of fertilizer deposited. The hopper and mechanism may be taken apart without the use of any tools — permitting easy cleaning of all parts in contact with the fertilizer. All fertilizer hoppers have been standardized so that they are interchangeable on various row-crop fertilizer attachments.

The split-row boot, designed in accordance with the methods developed by the National Joint Committee on Fertilizer Application, assures the greatest possible benefit from fertilizer. The boot divides the fertilizer into two streams, one on each side of the row or hill. The under side of the boot acts very much like a hand in closing the furrow opened by the planter boot. A high concentration of fertilizer is thus placed as near as possible to the seed without coming into actual contact with it. A single-row boot, which places the fertilizer in a single row in line with the seed, is available for use in extremely trashy or heavy soils.

Illust. 3 — The fertilizer attachment consists of hoppers, driving mechanism, delivery tubes, and boots. This fertilizer attachment with split-row boots is on the A-218 checkrow planter.

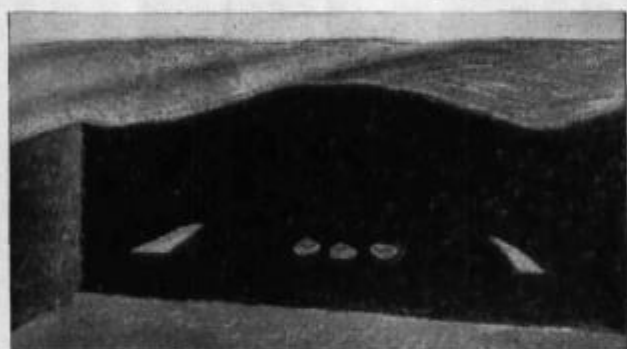


Trailing and Tractor-Mounted Corn Planters

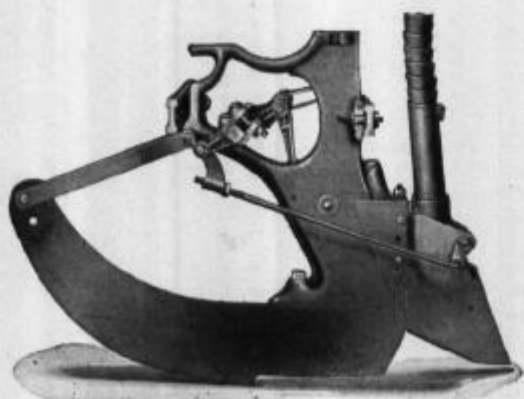
Features and Equipment (Continued)



Illust. 1—Part of the soil has been removed to show how the split-row fertilizer boot deposits fertilizer in two bands, one on each side of the hill. Fertilizer does not come in contact with the seed. In checkrow and power hill-drop planting, each band extends a few inches in front of, and behind, each hill, as shown; in drill planting the bands are continuous for the entire length of the row.



Illust. 2—Here is a "worm's eye-view," with a portion of the soil cut away, showing how the split-row boot places the fertilizer on each side of the hill.



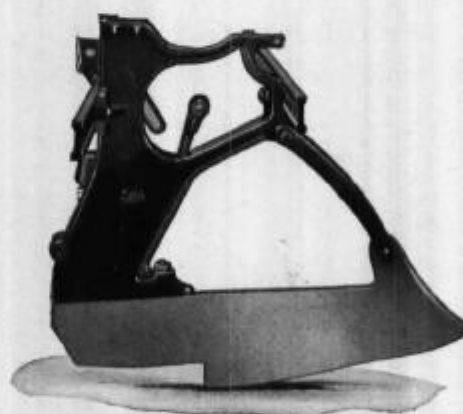
Illust. 3—Side view of the split-row fertilizer boot attached to the high-speed seed boot. By attaching the fertilizer boot in the various holes the fertilizer can be deposited at different levels—on a level with the seed, or above the seed.

Illust. 4—This is the large-capacity hopper which is regular equipment on fertilizer attachments for all planters except the horse-drawn machines. The hopper wall has been cut away to show the star-feed wheel and the agitator arm which assure a steady stream of fertilizer. The lever and quadrant at the left control the quantity deposited.

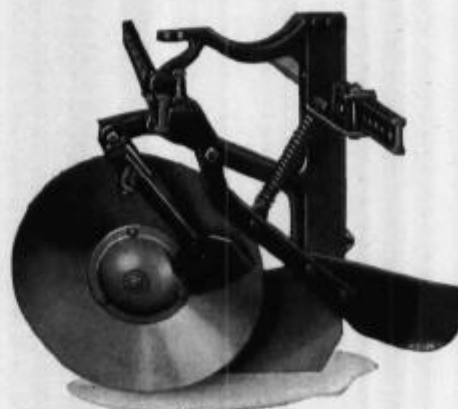


Choice of Furrow Openers

All planters are supplied with a choice of furrow openers. Full-runner openers are generally used for work under average soil conditions. Stub-runner openers are often preferred for trashy ground or quack grass. Single-disk and double-disk openers are considered best for hard or stone-infested soil; they are also desirable in soddy or trash-covered soil where a runner opener may carry the trash along.



Illust. 5—Stub-runner furrow opener.



Illust. 6—Single-disk furrow opener.



Trailing and Tractor-Mounted Corn Planters

Features and Equipment (Continued)

Flat-Drop Plates

(A Filler Ring is required for use with all Flat-Drop Seed Plates, as indicated in table below.)

Part Number of Plate	Number of Cells	Size of Cells	Comparative Size of Cells	Typical Seed
1 852 AA	Blank plate, $\frac{3}{16}$ in. thick (drilled as ordered).....			
§ 3 099 A	Blank plate, $\frac{3}{16}$ in. thick (drilled as ordered).....			
△ 3 544 A	Blank plate, $\frac{3}{8}$ in. thick (drilled as ordered).....			
1 964 A	8	$\frac{11}{16} \times \frac{1}{2}$ in.	Large	Short Flat Corn
1 965 A	8	$\frac{5}{8} \times \frac{1}{2}$ in.	Medium	Short Flat Corn
1 966 A	8	$\frac{3}{16}$ in. dia.	Small	Round Flat Corn
1 968 A	8	$\frac{13}{32} \times \frac{1}{4}$ in.	Small	Soybeans (1 Bean)
1 969 A	8	$\frac{3}{4} \times \frac{5}{16}$	Medium	Soybeans (2 Beans)
3 075 A	8	$\frac{3}{4}$ in. dia.	Extra Large	Round Flat Corn
3 076 A	8	$\frac{11}{32}$ in. dia. (twin cells).....		Peas (Memphis)
3 085 A	8	$\frac{3}{8} \times \frac{9}{32}$ in.	Medium	Soybeans, Peas, Beets
3 086 A	12	$\frac{3}{8} \times \frac{9}{32}$ in.	Medium	Soybeans, Peas, Beets
3 351 AA	12	$\frac{7}{16}$ in. dia.	Small	Corn (Flat Round Hybrid)
1 898 A	14	$\frac{9}{16}$ in. dia.	Small	Round Flat Corn
1 899 A	14	$\frac{3}{4}$ in. dia.	Large	Round Flat Corn
1 794 A	16	$\frac{5}{8} \times \frac{5}{16}$ in.	Small	Corn, Hybrid Corn
1 795 A	16	$\frac{5}{8} \times \frac{13}{32} \times \frac{3}{8}$ in.	Medium	Corn
1 796 A	16	$\frac{11}{16} \times \frac{7}{16} \times \frac{13}{32}$ in.	Large	Corn
1 853 A	16	$\frac{3}{8} \times \frac{7}{32}$ in.	Medium	Popcorn
1 854 AA	16	$\frac{3}{8} \times \frac{9}{32}$ in.	Medium	Beet and Bean
1 855 A	16	$\frac{1}{2} \times \frac{3}{8}$ in.	Small	Short Flat Corn, Hybrid Corn
1 856 A	16	$\frac{19}{32} \times \frac{7}{16}$ in.	Medium	Short Flat Corn
1 857 A	16	$\frac{11}{16} \times \frac{1}{2}$ in.	Large	Short Flat Corn
† 1 901 A	16	$\frac{1}{4}$ in. dia.	Medium	Kaffir and Small Seeds
† 1 903 A	16	$\frac{1}{2} \times \frac{5}{32}$ in.	Medium	Melon and Cucumber Seeds
1 927 A	16	$\frac{3}{4}$ in. dia.	Extra Large	Round Flat Corn
1 928 A	16	$\frac{5}{8}$ in. dia.	Medium	Round Flat Corn
1 938 A	16	$\frac{9}{16}$ in. dia.	Small	Round Flat Corn
§ 3 001 A	16	$\frac{9}{16} \times \frac{5}{16}$ in.	Small	Country Gentleman Corn
§ 3 002 A	16	$\frac{5}{8} \times \frac{7}{32}$ in.	Large	Country Gentleman Corn
3 050 A	16	$\frac{21}{32} \times \frac{5}{16}$ in.	Small	Horse Tooth Corn
3 051 A	16	$\frac{23}{32} \times \frac{5}{16}$ in.	Medium	Horse Tooth Corn
3 052 A	16	$\frac{13}{16} \times \frac{11}{32}$ in.	Large	Horse Tooth Corn
† 3 143 A	16	$\frac{5}{8} \times \frac{5}{16}$ in.		Sunflower
3 214 A	16	$\frac{7}{16} \times \frac{9}{32}$ in.		Black Eye Beans
§ 3 225 A	16	$\frac{5}{8} \times \frac{13}{64}$ in.	Large	Country Gentleman Corn
3 266 A	16	$\frac{15}{32} \times \frac{3}{8}$ in.		Corn, Pea, Bean, Hybrid Corn
3 303 A	16	$\frac{7}{16} \times \frac{7}{32}$ in.	Extra Small	Hybrid Corn (Small Tip Kernel)
3 321 A	16	$\frac{17}{32} \times \frac{9}{32}$ in.	Medium	Hybrid Corn (Thin Flat)
3 329 A	16	$\frac{7}{16} \times \frac{11}{32}$ in.	Special Small	Round Flat Corn, Hybrid Corn
3 330 AA	16	$\frac{1}{2} \times \frac{31}{64}$ in.	Small	Round Flat Corn, Hybrid Corn
3 350 AA	16	$\frac{7}{16}$ in. dia.	Small	Corn (Flat Round Hybrid)
3 365 A	16	$\frac{15}{32}$ in. dia.	Extra Small	Corn (Flat Round Hybrid)
3 419 A	16	$\frac{27}{64} \times \frac{19}{64}$ in.	Small	Corn (Flat Hybrid)
1 967 A	20	$\frac{5}{32}$ in. dia.		Sorghum
1 930 A	24	$\frac{17}{32} \times \frac{1}{4}$ in.		Beet Seed
1 931 A	24	$\frac{19}{32} \times \frac{5}{16}$ in.		Bean
3 087 A	24	$\frac{19}{32} \times \frac{7}{16}$ in.	Medium	Short Flat Corn
3 088 A	24	$\frac{11}{16} \times \frac{1}{2}$ in.	Large	Short Flat Corn
† 3 109 A	24	$\frac{1}{4} \times \frac{1}{8}$ in.	Small	Kaffir Corn
1 929 A	32	$\frac{3}{8} \times \frac{5}{16}$ in.	Medium	Pea Bean
● 3 168 A	32	$\frac{1}{4} \times \frac{7}{64}$ in.		Broom Corn
△ 3 559 A	40	$\frac{3}{16}$ in. dia.		Sorghum
● 3 169 A	64	$\frac{1}{4} \times \frac{7}{64}$ in.		Broom Corn

† Special Filler Ring (1 932 AA— $\frac{1}{2}$ in. thick) used with these plates.

§ Special Filler Ring (3 000 A— $\frac{11}{16}$ in. thick) used with these plates.

● Special Filler Ring (3 167 AB— $\frac{13}{16}$ in. thick) used with these plates.

△ Special Filler Ring (3 447 AA— $\frac{1}{2}$ in. thick) and Special Knecker (3 460 A) used with this plate.

All other Flat Drop Plates take regular Filler Ring (13 870 A— $\frac{1}{2}$ in. thick).



Trailing and Tractor-Mounted Corn Planters

Features and Equipment (Continued)

Edge-Drop Plates

(All Edge Drop Plates are $\frac{5}{16}$ in. thick except as noted. No Filler Ring used with these plates.)

Part Number of Plate	Number of Cells	Size of Cells	Comparative Size of Cells	Typical Seed
3 045 AA	Blank plate, $\frac{5}{16}$ in. thick (drilled as ordered)			
1 961 A	8	$\frac{9}{16} \times \frac{3}{16}$ in.	Small	Corn
1 962 A	8	$\frac{9}{8} \times \frac{5}{16}$ in.	Medium	Corn
1 963 A	8	$\frac{11}{16} \times \frac{15}{64}$ in.	Large	Corn
3 215 A	8	$\frac{15}{16} \times \frac{31}{32}$ in.		Lima Bean
3 229 A	8	$\frac{1}{4} \times \frac{15}{16}$ in.	Extra Large	Mexican Bean
3 353 A	8	$\frac{33}{64} \times \frac{1}{4}$ in.	Small	Corn (thick)
* 1 959 A	10	$\frac{9}{8} \times \frac{5}{16}$ in.	Medium	Corn
* 1 970 A	10	$\frac{9}{16} \times \frac{3}{16}$ in.	Small	Corn
* 1 971 A	10	$\frac{11}{16} \times \frac{15}{64}$ in.	Large	Corn
* 3 173 AA	10	$\frac{1}{2} \times \frac{3}{16}$ in.	Extra Small	Corn
* 3 174 A	10	$\frac{9}{16} \times \frac{11}{64}$ in.	Small Thin	Corn
* 3 175 A	10	$\frac{9}{8} \times \frac{11}{64}$ in.	Medium Thin	Corn
1 972 A	12	$1 \times \frac{11}{16}$ in.	Large	Mexican Bean
3 091 A	12	$\frac{5}{8} \times \frac{3}{16}$ in.	Medium	Corn
3 092 A	12	$\frac{11}{16} \times \frac{15}{64}$ in.	Large	Corn
3 352 A	12	$\frac{33}{64} \times \frac{1}{4}$ in.	Small	Corn (thick)
1 891 A	16	$\frac{7}{8} \times \frac{17}{32}$ in.		Bean
1 975 A	16	$\frac{1}{2} \times \frac{3}{16}$ in.	Special Small	Corn, Hybrid Corn
1 977 A	16	$\frac{19}{32} \times \frac{5}{16}$ in.	Small	Corn
1 978 A	16	$\frac{9}{8} \times \frac{13}{64}$ in.	Medium	Corn
1 979 A	16	$\frac{11}{16} \times \frac{15}{64}$ in.	Large	Corn
3 042 A	16	$\frac{1}{2} \times \frac{11}{32}$ in.		Nova Scotia Marrow Beans, Hybrid Corn
3 056 A	16	$\frac{25}{32} \times \frac{7}{32}$ in.	Extra Large	Corn
3 058 A	16	$\frac{11}{16} \times \frac{1}{4}$ in.	Medium	Kidney Bean
3 059 A	16	$\frac{27}{32} \times \frac{9}{32}$ in.	Large	Kidney Bean
3 104 A	16	$\frac{33}{64}$ in. dia.		Bean
3 106 A	16	$\frac{21}{32}$ in. dia.		Lima Bean
3 142 A	16	$\frac{3}{4} \times \frac{5}{8}$ in.		Kidney Bean
3 171 A	16	$\frac{9}{16} \times \frac{11}{64}$ in.	Small Thin	Corn
3 172 A	16	$\frac{9}{8} \times \frac{11}{64}$ in.	Medium Thin	Corn
3 236 A	16	$\frac{1}{2} \times \frac{3}{16}$ in.	Small	Sweet Corn
3 237 AA	16	$\frac{33}{64} \times \frac{1}{4}$ in.	Medium	Sweet Corn
□ 3 313 A	16	$\frac{15}{32} \times \frac{9}{32}$ in.	Medium	Hybrid Sweet Corn (Thick)
□ 3 314 A	16	$\frac{7}{16} \times \frac{1}{4}$ in.	Small	Hybrid Sweet Corn (Thick)
3 324 A	16	$\frac{15}{32} \times \frac{19}{64}$ in.	Medium	Hybrid Corn (Spherical Butts)
3 331 A	16	$\frac{15}{32} \times \frac{3}{8}$ in.	Medium	Hybrid Corn (Round Butts)
3 354 A	16	$\frac{3}{4} \times \frac{3}{8}$ in.		Peanuts
3 366 A	16	$\frac{15}{32} \times \frac{7}{32}$ in.	Medium	Hybrid Corn (Short, thick, flat)
□ 3 367 A	16	$\frac{15}{32} \times \frac{11}{64}$ in.	Extra Small	Hybrid Corn (Thin, flat)
□ 3 398 A	16	$\frac{13}{32} \times \frac{5}{16}$ in.	Medium	Hybrid Corn (Round)
3 345 A	16	$\frac{9}{16} \times \frac{11}{64}$ in.	Small	Thin Narrow Corn
3 346 A	16	$\frac{33}{64} \times \frac{3}{16}$ in.	Extra Small	Narrow Corn
3 347 A	16	$\frac{17}{32} \times \frac{11}{64}$ in.	Extra Small	Thin Narrow Corn
3 361 A	16	$\frac{1}{2} \times \frac{19}{64}$ in.	Medium	Long Round Corn
3 613 A	16	$\frac{19}{32} \times \frac{11}{32}$ in.	Large	Large Long Round Corn
3 355 A	20	$\frac{3}{4} \times \frac{3}{8}$ in.		Peanuts
3 127 A	22	$\frac{27}{32} \times \frac{23}{32}$ in.		Peas
3 043 A	24	$\frac{1}{2} \times \frac{11}{32}$ in.	Medium	Nova Scotia Marrow Bean
3 097 A	24	$\frac{3}{4} \times \frac{5}{16}$ in.	Medium	Kidney Bean
3 098 A	24	$\frac{7}{8} \times \frac{5}{16}$ in.	Large	Kidney Bean
3 114 AA	24	$\frac{21}{32} \times \frac{15}{32}$ in.	Large	Marrow Bean
1 926 A	29	$\frac{5}{8} \times \frac{9}{32}$ in.	Medium	Ensilage
□ 3 302 A	29	$\frac{5}{8} \times \frac{5}{16}$ in.		Beans
○ 3 301 A	34	$\frac{5}{8} \times \frac{7}{16}$ in.		Large Soybeans, Peas (2 seeds)
3 231 A	38	$\frac{7}{16} \times \frac{3}{8}$ in.		Peas
□ 3 638 A	40	$\frac{3}{4} \times \frac{1}{4}$ in.		Soybeans

○ $\frac{5}{16}$ in. thick—Brush cut off recommended. □ $\frac{1}{4}$ in. thick. * For all planters except C-220 checkrow planter.

Full Hill-Drop Plates

(A Filler Ring is required for use with all Seed Plates less than $\frac{5}{16}$ in. thick as noted in table below.)

Part Number of Plate	Number of Cells	Size of Cells	Comparative Size of Cells	Typical Seed
1 892 A	8	$\frac{19}{32}$ in. dia.	Medium	Corn
1 893 A	8	$\frac{21}{32}$ in. dia.	Large	Corn
3 082 A	8	$\frac{17}{32}$ in. dia.	Small	Corn
3 083 A	8	$\frac{15}{32}$ in. dia.	Special Small	Corn
3 328 A	8	$\frac{7}{16}$ in. dia.	Special Small	Very Small Hybrid Corn
† 3 445 A	8	$\frac{3}{4}$ in. dia.	Large	Tomato Seed
† 3 446 A	8	$\frac{7}{32}$ in. dia.	Medium	Tomato Seed

† Special filler ring (3 447 AA) and special knocker (3 460 A) used with these plates.



Trailing and Tractor-Mounted Corn Planters

Features and Equipment (Continued)

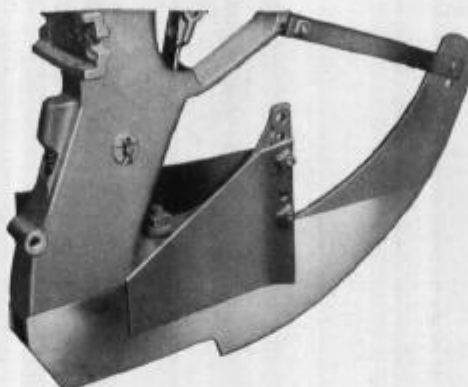
Special Equipment

Disk and blade furrowing attachments are available for use with full-runner furrow openers when planting on the contour or on the flat. They open up a furrow ahead of the regular runner, form small ridges on each side of the row, and thoroughly work the soil and kill weed seedlings, permitting the seed to be placed in the

moist soil where it will get a good start. In power hill-drop and drill planting, these small ridges can be thrown back into the row during early cultivation — effectively killing weeds coming up in the row between the plants. In semi-arid regions the small ridges formed on each side of the row protect the small plants from the danger of being cut by blowing topsoil. Furrowing attachments assure a uniform planting depth.



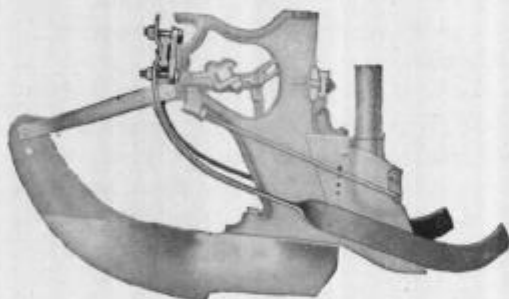
Illust. 1 — No. 6 blade furrowing attachment for wide furrows.



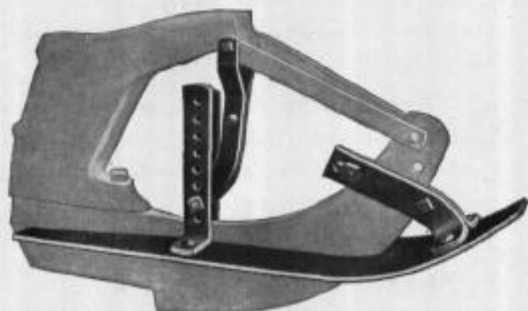
Illust. 2 — No. 10 blade furrowing attachment for narrow furrows.



Illust. 3 — No. 7 disk furrowing attachment has 11-in. disks for wide furrows.



Illust. 4 — No. 13 fertilizer blade covering attachment for all 2-row planters except A-218 series. No. 15 is available for A-218 series and No. 14 is for 4-row planters. No. 12 is stiff-blade attachment for all planters.



Illust. 6 — No. 4 gauge shoe, for gauging depth of planting from the runner, is 6 inches wide. The No. 11 gauge shoe, which is similar, is for work in loose or sandy soil and is 10 inches wide.

Illust. 5 — Disk markers are available as special equipment.



Illust. 7 — No. 9 disk furrowing attachment has 9-in. disks for narrow furrows and is recommended for use with split-row fertilizer boot.



Tractor-Trailing Corn Planters

Nos. 240, 241 and 242 Two-Row

- Checkrow, power hill-drop and drill planters.
- For any make of row-crop tractor.
- Quick - attaching, easy - handling, and accurate trailing.
- Fast, accurate planting at speeds up to 120 buttons a minute . . . 240 hills a minute.
- Plant any size and shape of hybrid corn and many other types of seed.

These ruggedly constructed, high-speed, two-row trailing planters can be used with any make of row-crop tractor. The No. 240 is a versatile checkrow planter that can also be used for power hill-drop and drill planting. The No. 241 is a simple, economical drill planter. The No. 242 is a power hill-drop planter that can also be used for drill planting.

They are adjustable for row spacings from 32 to 42 inches, drilling distances from $1\frac{3}{4}$ to 58 inches, and hill-drop spacings of 28, $33\frac{1}{4}$ and $43\frac{1}{2}$ inches. Drilling distances ordinarily obtained with any seed plate can be doubled by using a slow-speed sprocket attachment available as special equipment.

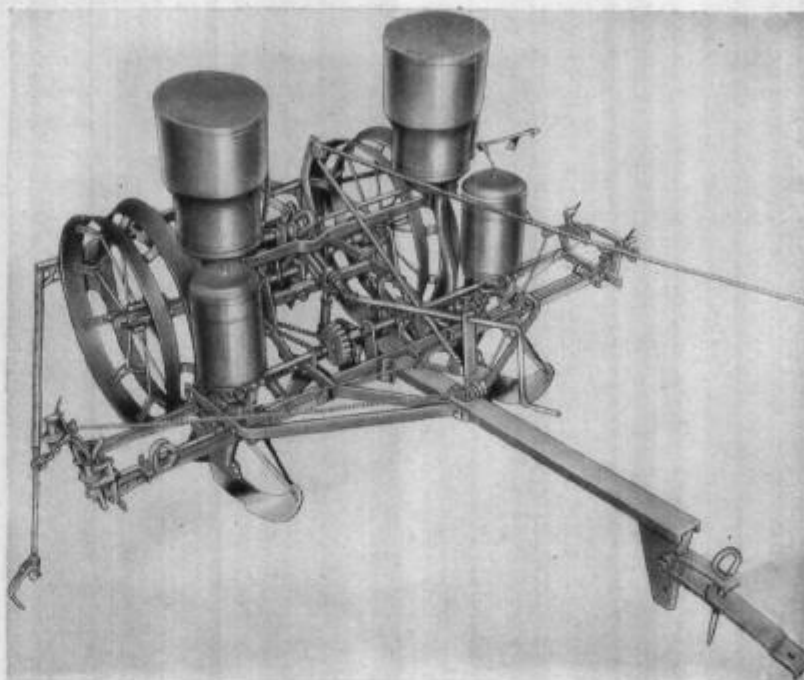
Heavy-duty construction keeps the furrow openers and all working parts in perfect alignment—giving accurate planting at tractor speeds. The rear frame is made of $\frac{5}{8}$ x $1\frac{1}{2}$ -inch solid carbon-steel bar stock and the heavy front frame is braced at nine points—contributing to the dependability and long life of the planter.

Easy, Convenient Adjustments

Planting depth is accurately controlled by a handy screw-type regulator. An adjustable tractor hitch enables the operator to keep the planter in a level position, regardless of the height of the drawbar. A leveling screw on the frame permits leveling one opener in relation to the other.

Ground-Drive Power Lift

The built-in power lift, driven by the ground wheels, is controlled by a rope from the tractor seat, and quickly raises or lowers the planting units in one half turn of the



Illust. 1—The No. 240 Checkrow planter, shown with fertilizer unit, can be used for checkrow, power hill-drop and drill planting.

wheels—permitting planting right up to the ends of the rows. It raises the planter to its maximum height regardless of the planting depth—ample clearance for turning and transporting.

High-speed boots, variable drop for exactly 2, 3 or 4 kernels per hill, dependable clutch, versatile seed hoppers, adjustable checkheads, and the wide variety of furrow openers and special equipment described in the Features and Equipment pages contribute to the effectiveness of these dependable, tested planters.

Regular Equipment

Corn hoppers. Two pairs of seed plates as ordered. Full-runner, stub-runner, single-disk or double-disk furrow openers, as ordered. Shoe-type markers.

No. 240 Checkrow Planter: Reel and 80 rods of wire with buttons spaced as ordered (from 28 to 48 in. at 2-inch intervals); level-winding sheave; adjustable check heads; two anchor stakes.

Specifications

No.	Description	Net Weight* (Approx.)
240	Checkrow Planter.....	704 lb.
241	Drill Planter.....	503 lb.
242	Power Hill-Drop Planter.....	503 lb.

*With full-runner furrow openers.



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Tractor-Trailing Corn Planters

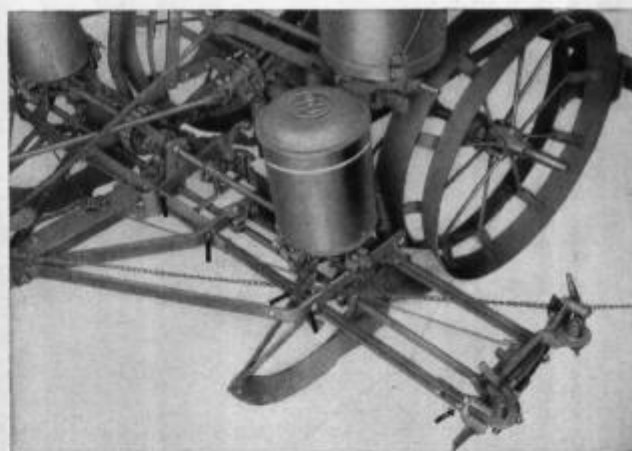
Nos. 240, 241 and 242 Two-Row (Continued)



Illust. 1 — The hitch can be set in four positions, making it possible to maintain level boots regardless of the height of the drawbar on the tractor.



Illust. 2 — If one furrow opener should run deeper than the other, this convenient leveling screw on the frame will bring both openers to the same level.



Illust. 3 — The front frame is rigidly braced at the center tongue brace and at four points on each side as the arrows indicate — furrow openers and working parts are always in perfect alignment.

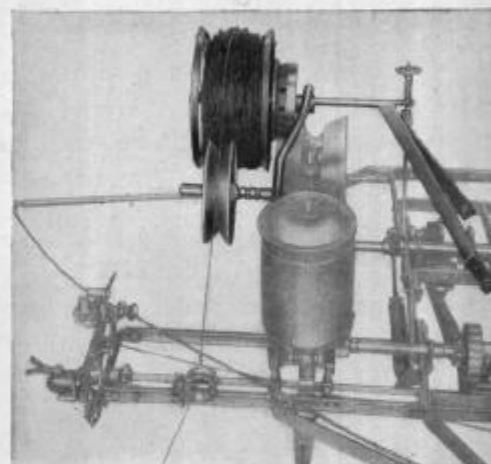
Special Equipment

Tomato seed plate package. Pea attachments for use with corn hoppers. Combination corn and pea hoppers. Grooved hopper bottom plate attachment for use with extra large kernels or seeds at higher tractor speeds. Brush cut-off.

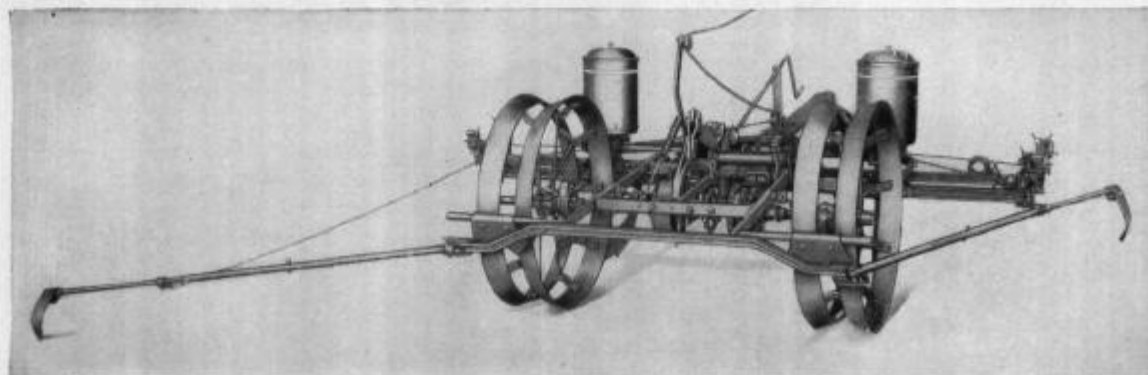
Slow-speed sprocket attachment for reducing the speed of the drill shaft when drilling at spacings of 14 inches and over. Nos. 6 and 10 blade furrowing attachments. Nos. 7, 8 and 9 disk furrowing attachments. Nos. 4 and 11 gauge shoe attachments. No. 13 covering blade attachments. Spring-balanced payout stakes (see page 192-G for illustration). Pneumatic tire wheels (less tires).

Fertilizer units with boots for split-row or single-row delivery for Nos. 240, 241 and 242. These fertilizer units are available with or without hoppers. Hopper feed wheels for light, medium or heavy application.

Wheels for pneumatic tires, to replace regular steel wheels. These wheels will accommodate old or new 6.00-16, 6.50-16 and 7.00-16 pneumatic tires furnished by the customer. The planters can be obtained factory equipped with 6.50-16, two-ply, smooth-tread, implement-type pneumatic tires. Pneumatic tires do not pick up moist soil as do steel wheels, and give better protection against shock in transportation.



Illust. 4 — The checkwire reel for the No. 240 is side-mounted to permit working close to a fence or trees at the edge of the field. The level-winding sheave distributes the wire evenly on the reel.

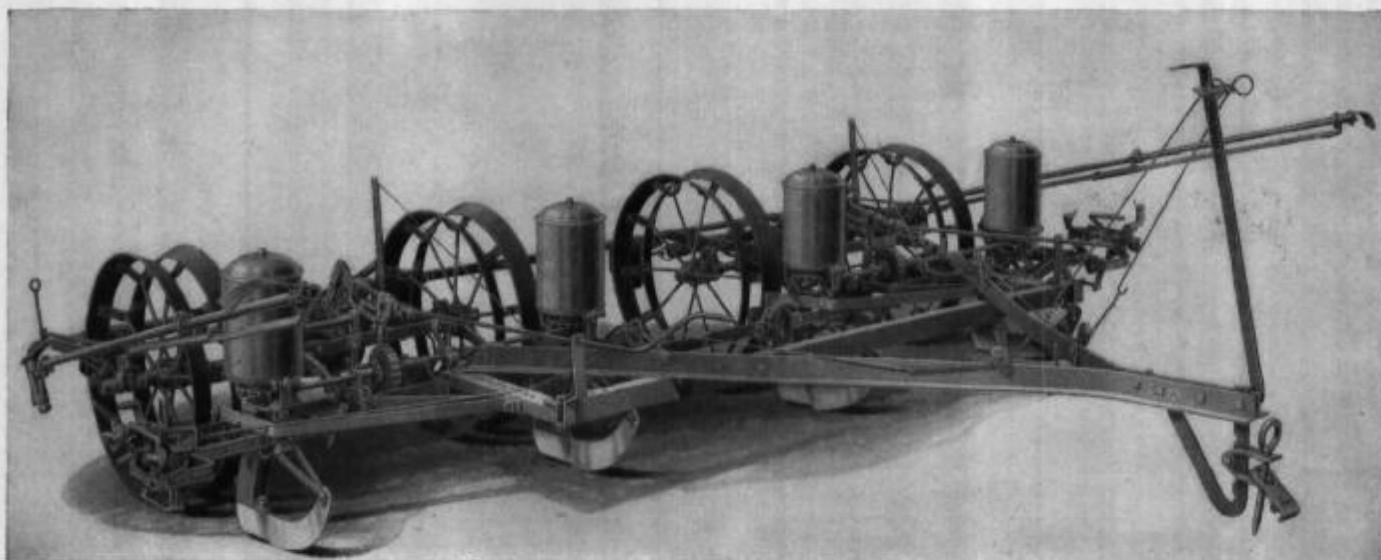


Illust. 5 — The markers are fully automatic . . . the down-marker automatically coming out of the ground when the planter is raised at the end of the row. The opposite marker lowers automatically. The markers are connected by a long-wearing chain. The 8-inch open-center wheels, directly behind the furrow openers, cover the furrows and firm the soil around the seed.



Tractor-Trailing Corn Planters

Nos. 440, 441 and 442 Four-Row



Illust. 1 — The No. 440 four-row checkrow tractor corn planter equipped with full-runner furrow openers.

- Checkrow, power hill-drop and drill planters.
- For any make of row-crop tractor.
- Quick-attaching, easy-handling and accurate trailing.
- Fast, accurate planting at speeds up to 120 buttons a minute . . . 480 hills a minute.
- Plant any size and shape of hybrid corn and many other types of seed.

These heavy-duty, four-row trailing planters are for the large acreage farmer who wants to plant more acres per day . . . do it accurately . . . and do it with the tractor he has. The No. 440 is a versatile checkrow planter that can also be used for power hill-drop and drill planting. The No. 441 is a simple, economical drill planter. The No. 442 is a power hill-drop planter that can also be used for drill planting.

They are adjustable for varying planting practices and can be set for row spacings from 38 to 42 inches, hill-drop spacings of 28, 33 $\frac{1}{4}$ and 43 $\frac{1}{2}$ inches, and drilling distances from 1 $\frac{3}{4}$ to 58 inches. A checkshaft coupling attachment is available, permitting a 36-inch row spacing. Drilling distances ordinarily obtained with any seed plate can be doubled by using a slow-speed sprocket attachment available as special equipment.

These planters consist of two 2-row units which are described on preceding pages. The two units are flexibly joined to assure a uniform planting depth for all four boots when working in uneven ground. Universal joints between the two 2-row units keep all four boots operating in unison so that proper cross alignment of hills is maintained in checkrow planting. Each unit

has a built-in, ground-drive power lift which quickly raises or lowers the unit in one-half turn of the wheels . . . permitting planting right up to the ends of the rows. The power lifts are controlled from the tractor seat.

Easy, Convenient Adjustments

Planting depth is easily controlled by means of screw-type cranks. An adjustable tractor hitch enables the operator to hitch the planter in a level position regardless of the height of the tractor drawbar. A leveling screw on each unit permits leveling the openers in relation to one another.

Automatic Markers

Automatic, power-operated markers permit quick, easy turning. The down marker is automatically raised as the planter is raised and turned at the end of the row. The other marker is lowered by a slight pull on a release rope . . . from the tractor seat in drill and power hill-drop planting . . . at the rear of the planter when the operator is off the tractor and setting the stake in checkrow planting.

As on the two-row planters, the open-center furrow wheels, which are directly behind the furrow openers, close the furrows and firm the soil around the seeds. Their 8-inch width keeps the wheels from sinking in loose soil . . . making the planter easy to maneuver.

Specifications

No.	Description	Net Weight* (Approx.)
440	Checkrow Planter.....	1493 lb.
441	Drill Planter.....	1154 lb.
442	Power Hill-Drop Planter.....	1255 lb.

*With full-runner furrow openers.



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Tractor-Trailing Corn Planters

Nos. 440, 441 and 442 Four-Row (Continued)

Illust. 1 — Two tension pay-out stakes are supplied with the No. 440 check-row planter. As the planter nears the end of the field, the side pull of the wire releases a tension ratchet in the stake, allowing the rope on the drum to pay out — a spring in the drum maintaining proper tension on the checkwire. This prevents stretching the checkwire and assures accurate cross-check right up to the end of the field.



High-speed boots, variable drop for exactly 2, 3 or 4 kernels per hill, dependable clutch, versatile seed hoppers, adjustable checkheads, and the wide variety of furrow openers and special equipment described in the Features and Equipment pages contribute to the effectiveness of these dependable four-row planters.

Regular Equipment

Corn hoppers. 2 sets of seed plates as ordered. Full-runner, stub-runner, single-disk or double-disk furrow openers, as ordered. Shoe-type markers. Lift jack.

No. 440 Checkrow Planter: 160-rod capacity reel, 80 rods of checkwire with buttons spaced as ordered (28 to 48 in., increasing at 2-in. intervals); level-winding sheave; adjustable checkheads; two tension pay-out stakes.

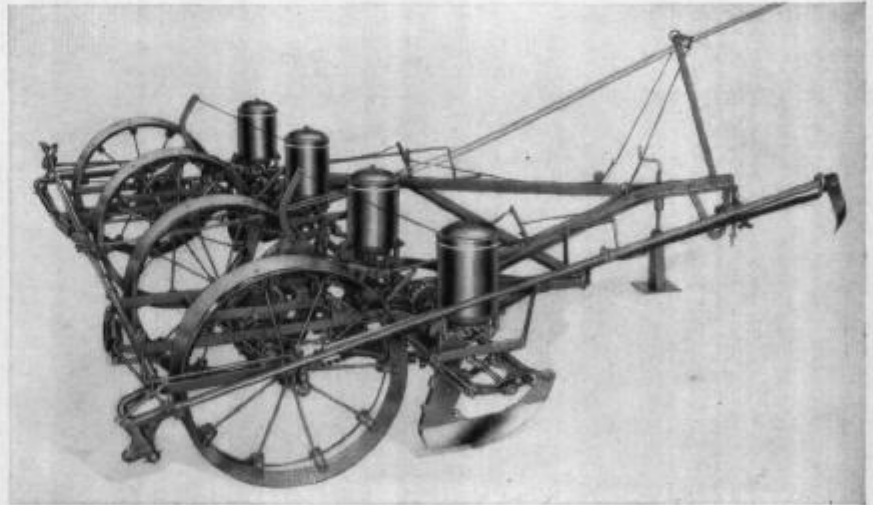
Special Equipment

Tomato seed plate package. Pea attachments for use with corn hoppers. Combination corn and pea hoppers. Grooved hopper bottom plate attachment for use with extra-large kernels or seeds at high tractor speeds. Brush cut-off.

Slow-speed sprocket attachment for reducing the speed of the drill shaft when drilling at spacings of 14 inches and over. Nos. 6 and 10 blade furrowing attachments. Nos. 7, 8 and 9 disk furrowing attachments. Nos. 4 and 11 gauge shoe attachments. Nos. 12 and 14 covering blade attachments. Disk marker attachment. Depth regulator extension cranks. Checkshaft coupling attachment for 36-inch row spacing.

Wheels for pneumatic tires, to replace regular steel wheels. (Same as for two-row planters, except 6.00-16 tires should not be used.)

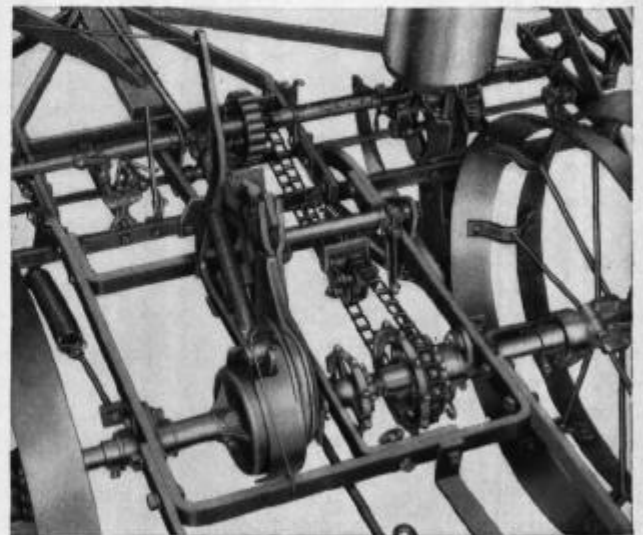
Fertilizer unit with boots for split-row or single-row delivery. Hopper feed wheels for light, medium or heavy application.



Illust. 2 — The No. 442 power hill-drop planter with full-runner furrow openers. The lift jack, supplied as an integral part of the planter, supports the front end of the planter for storage and while hitching the planter to the tractor. It is swung back and hung on a hook attached to the hitch frame after the planter is hitched to the tractor.



Illust. 3 — The checkshaft coupling between the two 2-row units provides flexibility for uniform planting depth in all four rows, and keeps all four boots operating in unison for accurate crosscheck. It is adjustable for different row spacings.



Illust. 4 — The power-lift is built-in as regular equipment. Note the heavy construction of the frame and all working parts.



INTERNATIONAL HARVESTER

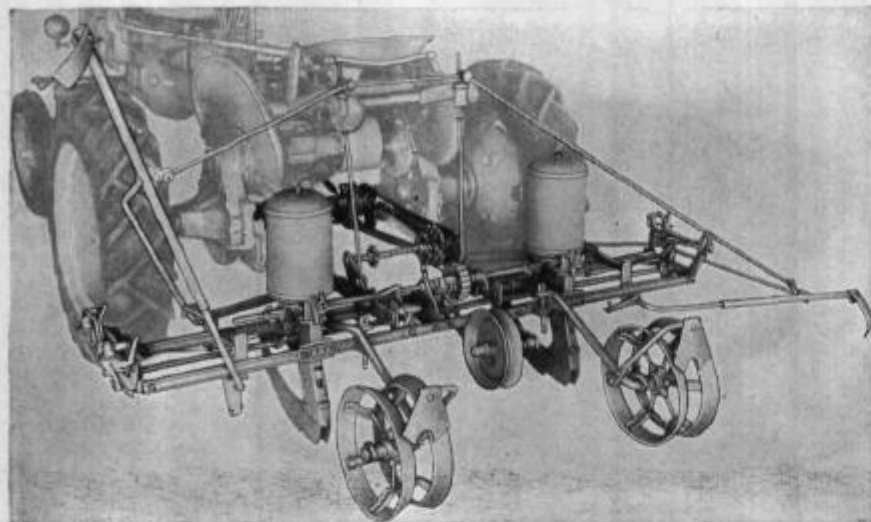
191-L

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Farmall Super-A Rear-Mounted Corn Planters

A-218, A-219 and A-222 Two-Row



Illust. 1—The A-218 checkrow planter mounted on the Farmall Super-A tractor. The planter is raised and lowered by Farmall Touch-Control.

- Checkrow, power hill-drop and drill planters.
- Farmall Touch - Control for effortless raising and lowering ... for accurate control of planting depth.
- Close-coupled for easy transportation ... for quick turning and lining up at ends of rows.
- Quick - Change — Easy to attach and detach.
- Fast, accurate planting at speeds up to 120 buttons a minute ... 240 hills a minute.
- Plant any size and shape of hybrid corn and many other types of seeds.

Effortless and instantaneous raising and lowering of the planter ... now possible with these two-row planters for the Farmall Super-A tractor. The A-218 is a versatile checkrow planter that can also be used for power hill-drop and drill planting. The A-219 is a simple, economical drill planter. The A-222 is a power hill-drop planter that can also be used for drill planting.

These planters are adjustable for row spacings from 28 to 48 inches, hill-drop spacings from approximately 28 to 45 inches, and drilling distances from approximately $3\frac{1}{2}$ to 55 inches. Drilling distances ordinarily obtained with any seed plate can be doubled by using a slow-speed sprocket attachment available as special equipment.

Easy to Attach

Attaching and detaching is a quick, one-man job. To attach the planter, just roll the planter into position behind the tractor ... attach the two upright lift rods to the Universal Rear Rockshaft which is required on the tractor ... slip the pin into the hitch on the drawbar, which must be set in the forward position ... attach driveshaft to tractor ... and connect the throwout arm to the Touch-Control power arm on the tractor. That's all!

Farmall Touch-Control

The entire planter can be raised clear of the ground by means of Farmall Touch-Control from the tractor seat, making possible quick-turning and lining up at the ends of the rows. The planter can be equipped to utilize Farmall Touch-Control for instantaneous control of the planting depth—a great convenience where soil conditions vary within a field and the planting depth requires frequent changing. Otherwise, planting depth is controlled by handy, screw-type regulators which are regular equipment.

Seed Hoppers Driven From Tractor

The seed hopper mechanism is driven from the tractor. A telescoping driveshaft with two universal joints connects the chain drive on the planter with the seed plate drive unit on the tractor. The telescoping feature and the universal joints of the shaft assure a uniform drill shaft speed regardless of the movement of the planter on uneven ground. This results in accurate spacing within the rows in power hill-drop and drill planting.

The seed plate drive, tractor parts No. 350 024 R91 required for these planters, is available on special order. This drive is for all Farmall Super-A tractor-driven planters and is priced separately to avoid duplication of parts.

Automatic Hopper Action

When the planter is lifted for transporting or turning, the planting action automatically stops, preventing the dropping of seeds on top of the ground. It is automatically resumed when the planter is lowered into working position. When a fertilizer attachment is used the hopper mechanism is controlled in the same manner.

High-speed boots, variable drop for exactly 2, 3 or 4 kernels per hill, dependable clutch, versatile seed hoppers, adjustable checkheads, and a wide variety of furrow openers and special equipment described in the Features and Equipment pages contribute to the effectiveness of these planters for the Farmall Super-A tractor.

Specifications

No.	Description	Net Weight* (Approx.)
A-218	Checkrow Planter.....	528 lb.
A-219	Drill Planter.....	351 lb.
A-222	Power Hill-Drop Planter.....	387 lb.

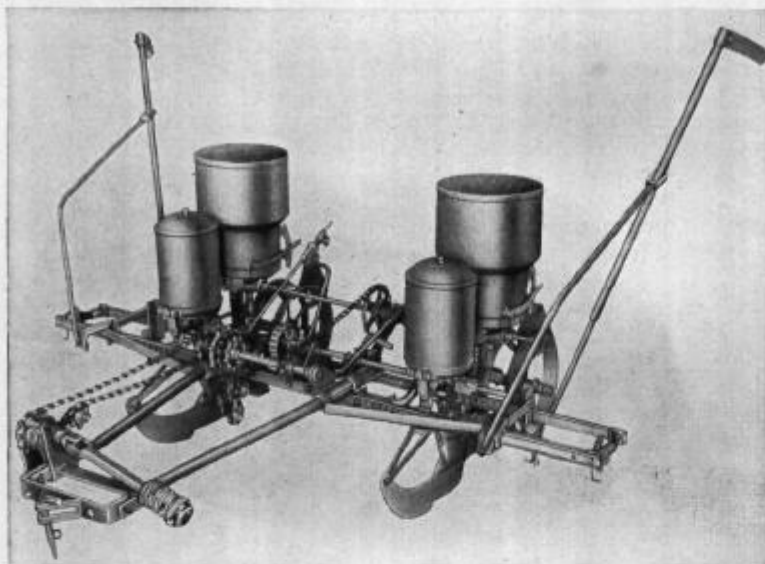
*With full-runner furrow openers.



Farmall Super-A

Rear-Mounted Corn Planters

A-218, A-219 and A-222 Two-Row (Continued)



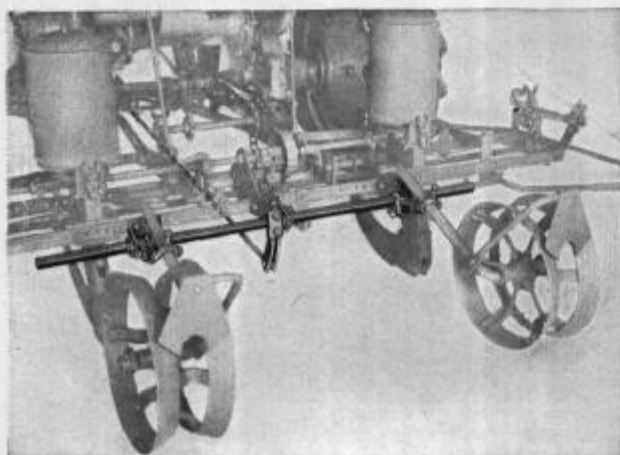
Illust. 1—The A-222 power hill-drop planter with fertilizer attachment. The telescoping drive shaft shown at the front of the frame attaches to the seed plate drive unit on the tractor axle housing and drives the seed plate mechanism.

For raising and lowering, these planters require one Universal (rigid) Rockshaft which is furnished only when ordered. If the purchaser already owns an A-189 or AV-189 direct-connected, one-furrow, two-way moldboard plow or contemplates the purchase of one, he can, by simple insertion of a bolt, use the Universal (split) Rockshaft in place of the rigid rockshaft.

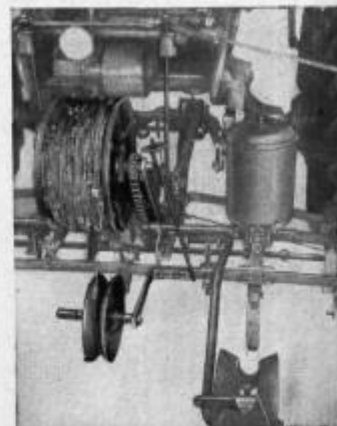
Regular Equipment

Corn hoppers. 2 pairs of seed plates, as ordered. Full-runner, stub-runner, single-disk or double-disk furrow openers as ordered. Shoe-type markers.

A-218 Checkrow Planter: Reel and 80 rods of checkwire with buttons spaced as ordered (28 to 48 in. at 2-in. intervals); level-winding sheave; adjustable checkheads; two stakes.



Illust. 3—Planting depth can be accurately controlled by means of the Touch-Control depth control attachment.



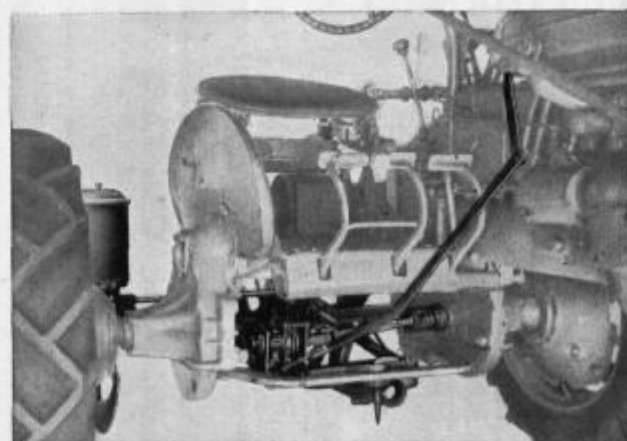
Illust. 2—The checkwire reel is quickly attached and detached. The level-winding sheave distributes the wire evenly on the reel.

Special Equipment

Tomato seed plate package. Pea attachments for use with corn hoppers. Combination corn and pea hoppers. Grooved hopper bottom plate attachment for use with extra-large kernels or seeds at high tractor speeds. Brush cut-off.

Slow-speed sprocket attachment for reducing the speed of the drill shaft when drilling at spacings of 14 inches and over. Nos. 6 and 10 blade furrowing attachments. Nos. 7, 8 and 9 disk furrowing attachments. Nos. 4 and 11 gauge shoes. Nos. 12 and 15 covering blade attachment. Touch-Control depth control attachment. Disk marker attachment. Spring-balanced pay-out stakes (refer to page 199-L for illust.)

Fertilizer attachment with boots for split-row delivery for A-218, A-219 and A-222. Fertilizer attachment with boots for single-row delivery for A-219. Hopper feed wheels for light, medium or heavy application.

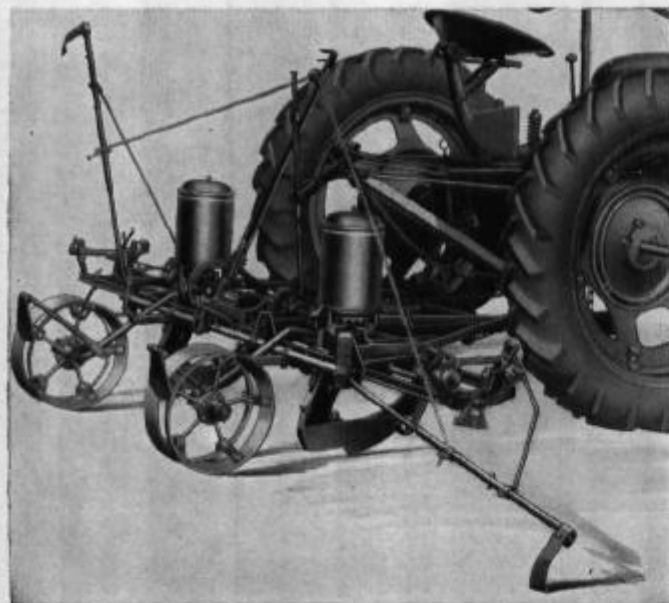


Illust. 4—The planter is hitched by a simple clevis pin at the center of the tractor drawbar. The drawbar is set in the forward position. The telescoping drive shaft is attached to the seed plate drive unit by a single pin. If the stub of the shaft is accidentally left in place on the tractor when the planter is removed, the coil spring keeps the shaft in a horizontal position . . . out of the way . . . and the tractor may be operated without damaging the shaft. A connection between the Touch-Control power arm on the tractor and the throwout clutch on the planter automatically stops the planter drive when it is raised and starts the drive when the planter is lowered.



Rear-Mounted Corn Planters

Nos. 210, 211 and 212 Two-Row For Farmall A, B, BN, H, M and MD Tractors



Illustr. 1—H-210 checkrow planter equipped for use with hydraulic Lift-All on Farmall H tractor. Planters for Farmall M and MD tractors are the same except for the drive sprocket on the tractor axle.

- Checkrow, power hill-drop and drill planters.
- Direct-connected for easy transportation, quick-turning, and lining up at the end of the row.
- Quick-attaching.
- Fast, accurate planting at speeds up to 120 buttons a minute . . . 240 hills a minute.
- Plant any size and shape of hybrid corn and many other types of seed.

These high-speed, two-row planters are direct-connected to the rear of Farmall A, B, BN, H, M and MD tractors. The No. 210 is a versatile checkrow planter that can also be used for power hill-drop and drill planting. The No. 211 is a simple, economical drill planter. The No. 212 is a power hill-drop planter that can be used for drill planting. The basic difference in the planters to adapt them to the various model tractors is in the mounting parts and the drive sprockets.

These planters are adjustable for row spacings from 28 to 48 inches, hill-drop spacings from approximately 26 to 48 inches, and drilling distances from approximately 3¼ to 65 inches. Fast and slow-speed change attachments provide additional drilling distances.

These machines are easily attached or detached, making the tractor readily available for other operations. They are close-coupled, lifting free of the ground for easy transportation and for quick turning and lining up at the end of the row. They can be supplied with hand-lift or equipped for operation with Farmall Lift-All. Depth of planting is accurately controlled by a convenient hand lever. Automatic markers permit quick, easy turning. The seeding mechanism is chain-driven

from a drive sprocket on the rear axle of the Farmalls H or M or from a sprocket on the seed-plate drive attachment on the Farmalls A, B or BN. The seed-plate drive attachment must be ordered if the tractor does not have one.

High-speed boots, variable drop for exactly 2, 3 or 4 kernels per hill, dependable clutch, versatile seed hoppers, adjustable checkheads, and the wide variety of furrow openers and special equipment described in the Features and Equipment pages contribute to the effectiveness of these dependable, tested planters.

Regular Equipment

Hand-lift or equipped for Lift-All, as ordered. Corn hoppers. 2 pairs of seed plates. Full-runner, stub-runner, single-disk, or double-disk furrow openers as ordered. Shoe-type markers.

No. 210 Checkrow Planters: reel and 80 rods of checkwire with buttons spaced as ordered (28 to 48 in. at 2-in. intervals); level-winding sheave; adjustable checkheads; two stakes.

Special Equipment

Tomato seed plate package. Pea attachments for use with corn hoppers. Combination corn and pea hoppers. Grooved hopper bottom plate attachment for use with extra large kernels or seeds at higher tractor speeds. Brush cut-off.

Fast-speed sprocket attachment for short drilling distances. Slow-speed sprocket attachment for slowing drill shaft speed at drilling distances greater than 14 inches. Nos. 6 and 10 blade furrowing attachments. Nos. 7, 8 and 9 disk furrowing attachments. Nos. 4 and 11 gauge shoes. Nos. 12 and 13 covering blade attachment. Disk marker attachment. Spring-balanced payout stakes (refer to page 199-L for illustration).

Fertilizer attachment with boots for split-row delivery for Nos. 210, 211 and 212 planters. Fertilizer attachment with boots for single-row delivery for No. 211 planters. Hopper feed wheels for light, medium, or heavy application.

Parts to adapt H or M-210, 211 and 212 planters to F-12, F-14, F-20 or F-30 tractors as hand lift planters, or to F-12, F-14 or F-20 tractors as power-lift planters.

Drawbar bracket extension attachment for use with large-size tires.

Specifications

No.	Description	Net Weight* (Approx.)
A-210	Checkrow Planter	656 lb.
A-211	Drill Planter	490 lb.
A-212	Power Hill-Drop Planter	534 lb.
B-210	Checkrow Planter	685 lb.
B-211	Drill Planter	522 lb.
B-212	Power Hill-Drop Planter	562 lb.
BN-210	Checkrow Planter	681 lb.
BN-211	Drill Planter	518 lb.
BN-212	Power Hill-Drop Planter	558 lb.
H-210	Checkrow Planter	703 lb.
H-211	Drill Planter	494 lb.
H-212	Power Hill-Drop Planter	547 lb.
M-210	Checkrow Planter	706 lb.
M-211	Drill Planter	496 lb.
M-212	Power Hill-Drop Planter	550 lb.

* With full-runner furrow openers.

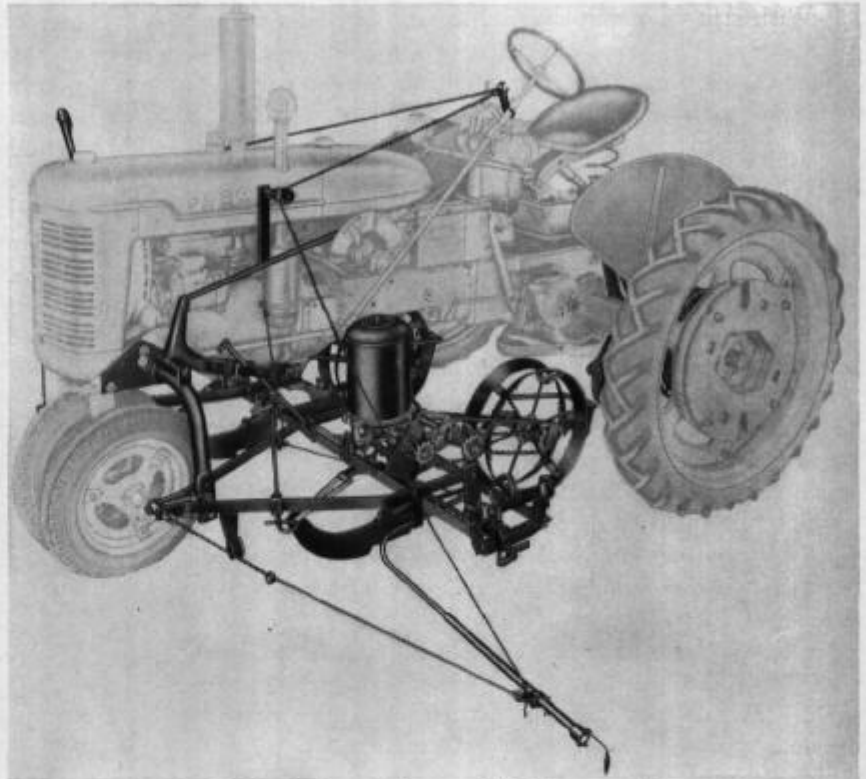




Forward-Mounted Corn Planters

C-220, C-221 and C-222 Two-Row

- Instantaneous raising and lowering with Farmall Touch-Control.
- Forward-mounted . . . leaving drawbar free for other jobs and permitting full view of planting operation.
- Clutchless drive permits planting according to fertility level of field.
- Quick-attaching . . . easy-handling.
- Fast, accurate planting at speeds up to 120 buttons a minute . . . 240 hills a minute.
- Plant any size and shape of hybrid corn and many other types of seed.



Illust. 1—The C-220 checkrow planter with full-runner furrow openers, shoe-type markers and checkwire reel. This planter is equipped with the power hill-drop attachment.

These forward-mounted, two-row corn planters for the Farmall C tractor are easily raised and lowered by means of Farmall Touch-Control. They are adjustable for row spacings from 28 to 48 inches, power hill-drop spacings from 28 to 53 inches, and drilling distances from $3\frac{1}{2}$ to 53 inches. The C-220 is a checkrow planter that can also be used for drill planting. The C-221 is a simple, economical drill planter. The C-222 is a power hill-drop planter than can also be used for drill planting. A power hill-drop attachment is available for the C-220 checkrow planter.

The planter consists of two sections, quickly joined at the center and mounted on the tractor by means of quick-attaching brackets . . . making attaching and detaching a quick, simple operation. The frame is ruggedly constructed to stand up under the strain of high-speed operation. The forward-mounting permits the operator to see all planting operations and leaves the tractor drawbar free for other jobs.

Plant to Fertility Level of Soil

Now . . . with the C-220 clutchless checkrow planter, closer control of the total population of kernels planted per acre is possible . . . a control not possible with the conventional clutch-type planter. It is now possible to plant to the fertility level, or richness of the soil. In

addition to planting the same number of kernels in every hill throughout a field, either 2, 3 or 4, an operator can now plant to achieve a desired total population for an entire field . . . resulting in hills that will average, throughout the field, between 1 and 2, 2 and 3, or 3 and 4 kernels.

Total Population per Acre and Fertility Level of Soil

The fertility level, or richness, of any field largely determines the yield. Planting too light or too heavy will affect both the quality and the yield. Light planting may result in many stalks bearing a second ear which is smaller, lighter and softer than the other ear, as well as poor ears borne by suckers. Too heavy planting may result in nubbins or missing ears. The corn grower who knows his land will probably know very closely, from past yields or soil analyses, the size of stand that will give the best yield.

Specifications

No.	Description	Net Weight (Approx.) Lb. ^a
C-220	Checkrow Planter.....	613
C-221	Drill Planter.....	409
C-222	Power Hill-Drop Planter.....	463

^a With full-runner furrow openers.





Forward-Mounted Corn Planters

C-220, C-221 and C-222 Two-Row (Continued)

With the conventional clutch-type planter, and planting at the same checkrow spacing for successive crops, the grower is limited to planting the same number of kernels in every hill through a field . . . either 2, 3 or 4. For example . . . at 40 x 40-inch spacing, a total population of 11,760 kernels per acre is obtained by planting hills containing 3 kernels. A qualitative and quantitative study of the yield may show that the fertility level of the soil can support a heavier population. To achieve a heavier population with a clutch-type planter, the next planting is made at the same row spacing with 4 kernels per hill . . . a total population of 15,680 kernels per acre. The resulting yield may indicate this population too heavy for the fertility level. A total population between these two extremes would probably be correct . . . 12,583 kernels per acre at the same row spacing, averaging 3.21 kernels per hill throughout the field. This population would utilize to the best advantage the plant food available in the soil . . . not too heavy or too light.

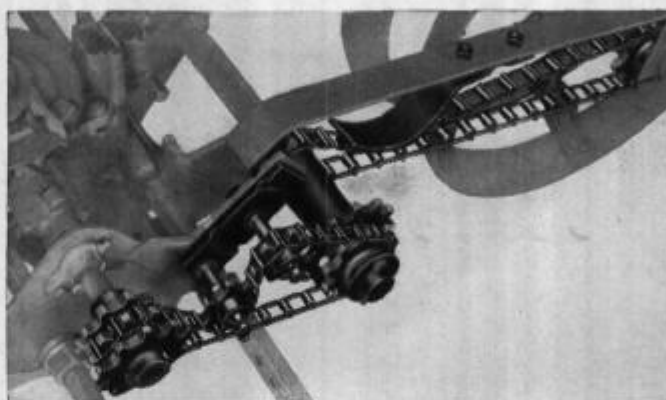
This average of 3.21 kernels per hill can be achieved with the C-220 checkrow planter by planting approximately 79 hills containing 3 kernels each for every 21 hills containing 4 kernels each . . . an impossibility with clutch-type planter. As a result of this distribution of 3's and 4's, the root systems of the hills containing 4 kernels extend to utilize the plant food not required by the hills containing 3 kernels. The combined 3's and 4's utilize the total quantity of nourishment available throughout the entire field. The tables on the next page illustrate the close control of total population per acre possible in checkrow planting at row and wire spacings of 36, 38, 40 and 42 inches.

Smooth-Action, Clutchless Seed Plate Drive

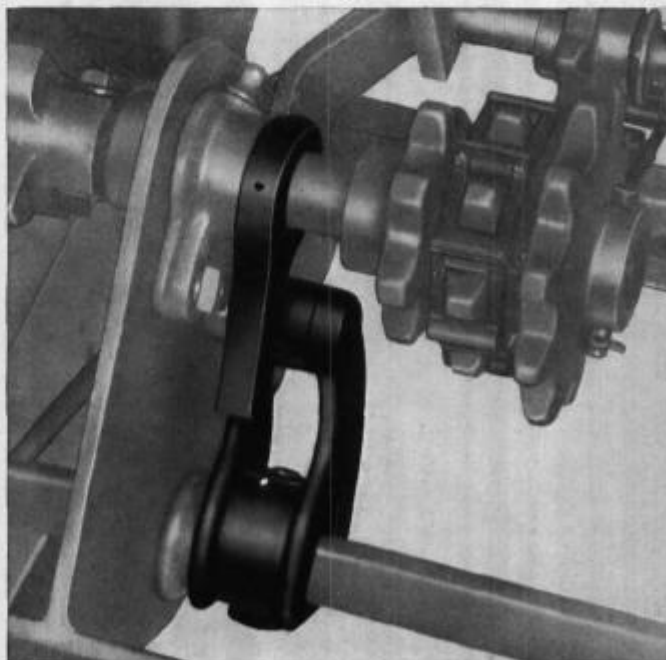
This increased selectivity of population per acre is possible because of the driving mechanism of the C-220 checkrow planter. The customary clutch has been eliminated and the drill shaft turns continuously with a smooth, uninterrupted motion. The drill shaft for each hopper is individually chain-driven by a 20-inch open-tire ground wheel. The ground wheels are independently suspended from the planter frame and are held in contact with the ground by springs, assuring continuous rotation of the drill shaft when planting in uneven ground. A speed change pinion on the drill shaft, 3 sprockets on the drill shaft, and 2 sprockets on the countershaft, offer a variety of 18 seed plate speeds.

In checkrow planting the selection of the seed plate speed determines the number of seed plate cells that discharge seeds into the boots during the intervals between buttons on the checkwire . . . thus determining the population of kernels per acre.

The C-221 drill planter and C-222 power hill-drop planter have the same clutchless drive. In power hill-drop planting the speed change pinion on the drill shaft can be set to plant the same number of kernels in every hill throughout a field . . . 2, 3 or 4, and the various combinations of sprockets on the drill shaft and counter shaft offer a wide variety of spacings between hills. In drill planting the variety of seed plate speeds achieved by various settings of the speed change pinion and sprockets offers a wide range of distances between kernels in the row.



Illust. 1 — The drill shaft for each hopper is chain-driven by a ground wheel. A speed change pinion on the drill shaft, 3 sprockets on the drill shaft, and 2 sprockets on the countershaft, offer a variety of 18 seed plate changes.



Illust. 2 — Checkrow planters can be adapted for power hill-drop planting by adding this special attachment. Each revolution of the drill shaft causes the power hill-drop arm to strike the rocker arm on the checkshaft, opening the boot valve and dropping a full hill of corn.



Farmall C

Forward-Mounted Corn Planters

C-220, C-221 and C-222 Two-Row (Continued)



Checkrow Population Tables for C-220 Checkrow Planter

(Figures are based on a 16-cell plate with one seed to each cell.)

36-inch Row Spacing, 36-inch Checkwire Spacing 4840 Hills per Acre

Population in Kernels per Acre	Ratio of Kernels per Hill in Every 100 Hills	Average Kernels per Hill	Settings		
			Counter Shaft Sprocket (teeth)	Drill Shaft Sprocket (teeth)	Speed Change Pinion (teeth)
8712	20-1's 80-2's	1.80	12	10	2
9293	8-1's 92-2's	1.92	9	7	2
9777	98-2's 2-3's	2.02	9	10	3
10890	75-2's 25-3's	2.25	12	8	2
12246	47-2's 53-3's	2.53	9	8	3
12438	43-2's 57-3's	2.57	12	7	2
13068	30-2's 70-3's	2.70	9	10	4
13988	11-2's 89-3's	2.89	9	7	3
16311	63-3's 37-4's	3.37	12	8	3
17424	40-3's 60-4's	3.60	12	10	4
18634	15-3's 85-4's	3.85	12	7	3
21780	50-4's 50-5's	4.50	12	8	4

38-inch Row Spacing, 38-inch Checkwire Spacing 4344 Hills per Acre

Population in Kernels per Acre	Ratio of Kernels per Hill in Every 100 Hills	Average Kernels per Hill	Settings		
			Counter Shaft Sprocket (teeth)	Drill Shaft Sprocket (teeth)	Speed Change Pinion (teeth)
7733	22-1's 78-2's	1.78	9	8	2
8254	10-1's 90-2's	1.90	12	10	2
8818	97-2's 3-3's	2.03	9	7	2
9252	87-2's 13-3's	2.13	9	10	3
10296	63-2's 37-3's	2.37	12	8	2
11599	33-2's 67-3's	2.67	9	8	3
11772	29-2's 71-3's	2.71	12	7	2
12382	15-2's 85-3's	2.85	9	10	4
13249	95-3's 5-4's	3.05	9	7	3
15465	44-3's 56-4's	3.56	12	8	3
16508	20-3's 80-4's	3.80	12	10	4
17679	93-4's 7-5's	4.07	9	7	4

40-inch Row Spacing, 40-inch Checkwire Spacing 3920 Hills per Acre

Population in Kernels per Acre	Ratio of Kernels per Hill in Every 100 Hills	Average Kernels per Hill	Settings		
			Counter Shaft Sprocket (teeth)	Drill Shaft Sprocket (teeth)	Speed Change Pinion (teeth)
7330	13-1's 87-2's	1.87	9	8	2
7840	100-2's	2.00	12	10	2
8389	86-2's 14-3's	2.14	9	7	2
8820	75-2's 25-3's	2.25	9	10	3
9800	50-2's 50-3's	2.5	12	8	2
11015	19-2's 81-3's	2.81	9	8	3
11172	15-2's 85-3's	2.85	12	7	2
11760	100-3's	3.00	12	10	3
12583	79-3's 21-4's	3.21	9	7	3
14700	25-3's 75-4's	3.75	12	8	3
15680	100-4's	4.00	12	10	4
16788	72-4's 28-5's	4.28	12	7	3

42-inch Row Spacing, 42-inch Checkwire Spacing 3556 Hills per Acre

Population in Kernels per Acre	Ratio of Kernels per Hill in Every 100 Hills	Average Kernels per Hill	Settings		
			Counter Shaft Sprocket (teeth)	Drill Shaft Sprocket (teeth)	Speed Change Pinion (teeth)
6970	4-1's 96-2's	1.96	9	8	2
7468	90-2's 10-3's	2.10	12	10	2
8001	75-2's 25-3's	2.25	9	7	2
8392	64-2's 36-3's	2.36	9	10	3
9317	38-2's 62-3's	2.62	12	8	2
10490	5-2's 95-3's	2.95	9	8	3
10658	100-3's	3.00	12	7	2
11202	85-3's 15-4's	3.15	12	10	3
13975	7-3's 93-4's	3.93	9	8	4
14934	80-4's 20-5's	4.20	12	10	4



Forward-Mounted Corn Planters

C-220, C-221 and C-222 Two-Row (Continued)



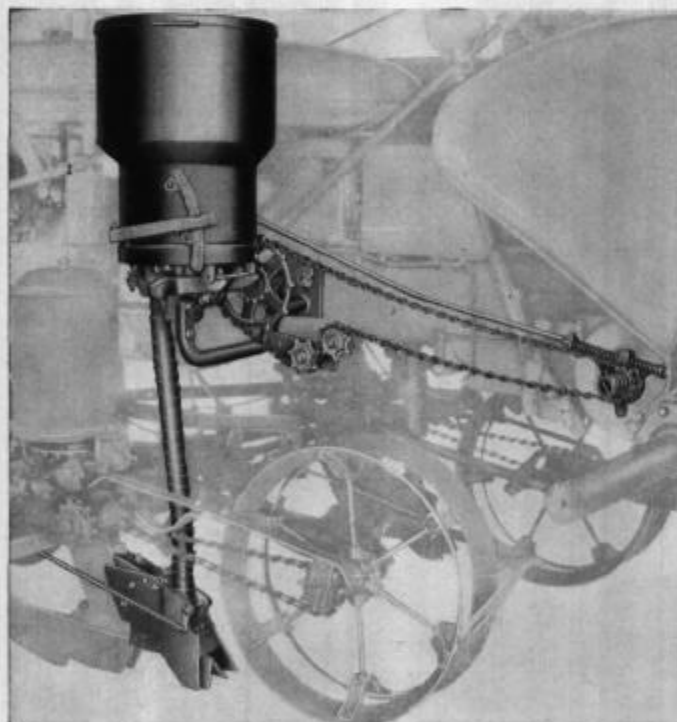
Easy, Convenient Adjustments

The planter can be equipped, if ordered, to utilize Farmall Touch-Control for instantaneous control of the planting depth—a great convenience where soil conditions vary within a field and the planting depth requires frequent changing. Otherwise, the planter will be supplied with convenient, screw-type depth control regulators.

As the planter is raised for turning at the end of the row, the down-marker comes clear of the ground—permitting quick, easy turning. The opposite marker is lowered from the tractor seat.

Fertilizer Attachment

Fertilizer attachments with split-row boots and large capacity, star-feed hoppers are available for



Illust. 1—The fertilizer attachment with split-row boots and large capacity hoppers for C-220 and C-222 planters. A similar attachment is available for the C-221 drill planter. Each hopper mechanism is chain-driven from a sprocket on the stubshaft (tractor attachment No. 351 515 R91) which must be ordered if the tractor is not so equipped. The hopper mechanism stops automatically when the planter is raised off the ground. This attachment, which attaches to tractor mounting pad, can be used for side dressing with the C-244 cultivator (see the C-244 pages for illustration).

C-220, C-221 and C-222 planters. They can be obtained without hoppers when the purchaser already has star-feed hoppers available from other fertilizer attachments. If the purchaser already has a fertilizer attachment for the C-244 cultivator, packages of boots and tubes are available to adapt the attachment for use with the C-220, C-221 or C-222 planters.

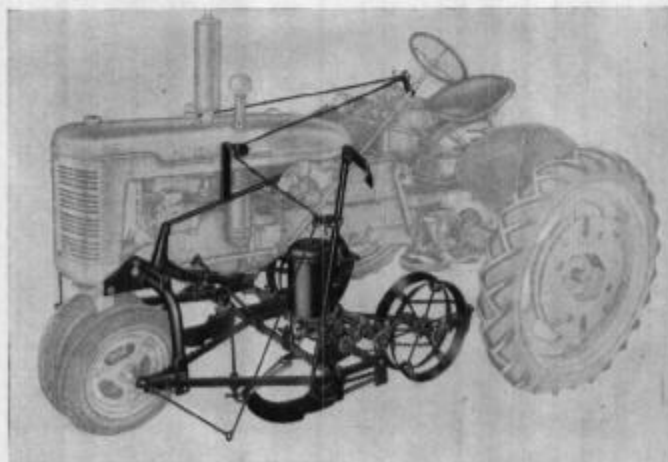
High-speed boots, versatile seed hoppers, adjustable checkheads, and a wide variety of furrow openers and special equipment described in the Features and Equipment pages contribute to the effectiveness of these forward-mounted, two-row corn planters for the Farmall C tractor.

The stub shafts which attach to the brake drums, tractor attachment No. 351 515 R91, are required for the C-220 checkrow planter (for reel drive) and for the C-221 and C-222 planters when they are equipped with a fertilizer attachment. They must be ordered if the tractor is not so equipped.

Regular Equipment

Corn hoppers. 2 pairs of seed plates as ordered. Full-runner, stub-runner, single-disk or double-disk furrow openers as ordered. Shoe-type markers. Manual depth-control.

C-220 Checkrow Planter: Reel with level winding sheave and 80 rods of checkwire with buttons spaced as ordered (28 to 48-in. at 2-in. intervals); adjustable checkheads; two spring-balanced payout stakes.



Illust. 2—The C-221 drill planter with full-runner furrow openers and automatic shoe-type markers.



Forward-Mounted Corn Planters

C-220, C-221 and C-222 Two-Row (Continued)

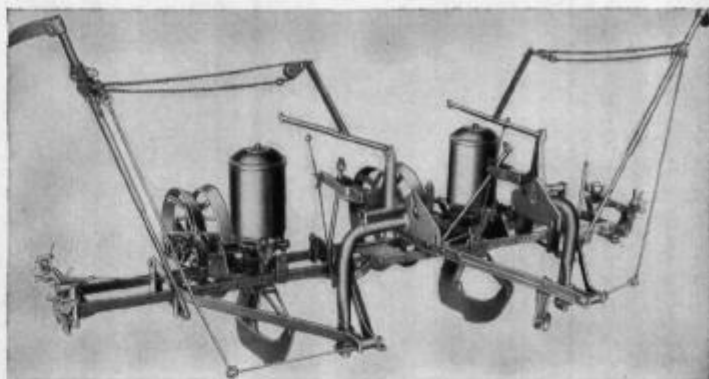
Special Equipment

Tomato seed plate package. Pea attachment for use with corn hoppers. Combination pea and corn hopper attachment. Grooved hopper bottom plate attachment for use with extra large kernels or seeds. Brush cut-off attachment.

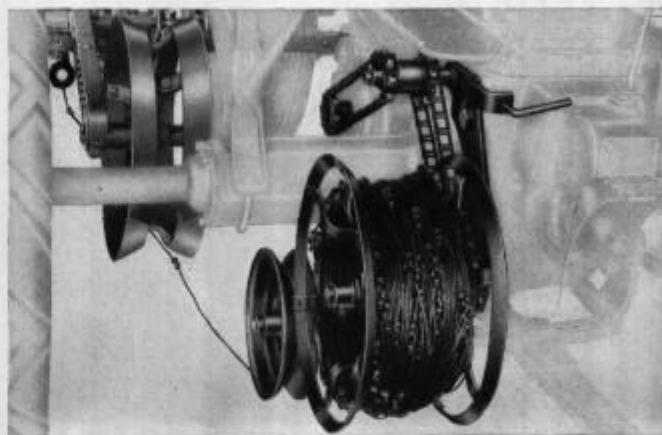
Nos. 6 and 10 blade furrowing attachments. Nos. 7, 8 and 9 disk furrowing attachments. Nos. 4 and 11 gauge shoes. Disk marker attachment. Power hill-drop attachment for C-220 checkrow planter.

No. 298 fertilizer unit with split-row boots for C-220 and C-222 planters; No. 308 fertilizer attachment without hoppers. No. 299 fertilizer attachment with split-row boots for C-221 drill planter; No. 309 fertilizer unit without hoppers. Hopper feed wheels for light, medium or heavy application. Split-row fertilizer boot and tube packages for adapting C-244 cultivator fertilizer unit for C-220, C-221 and C-222 planters.

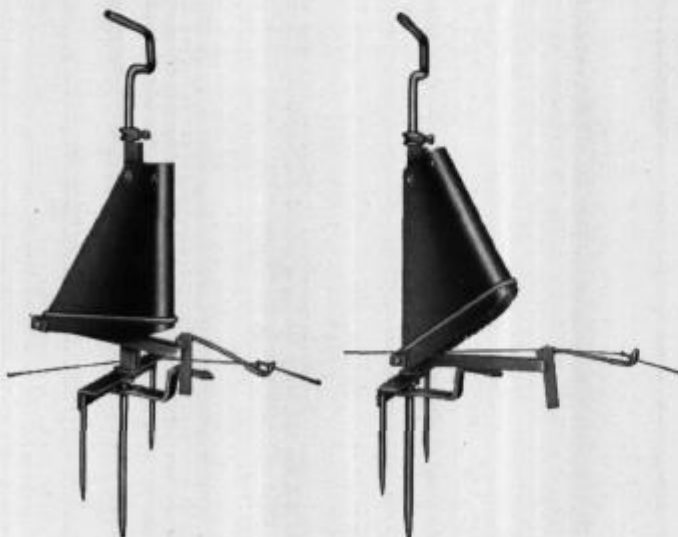
Wheel with 6.00-9, two-ply, smooth-tread pneumatic tires, for operation at very low pressure, to replace steel wheels. Pneumatic tires do not pick up dirt, and provide better traction in wet soil.



Illust. 1 — Unmounted view of the C-220 checkrow planter with the left and right-hand units joined at the center.

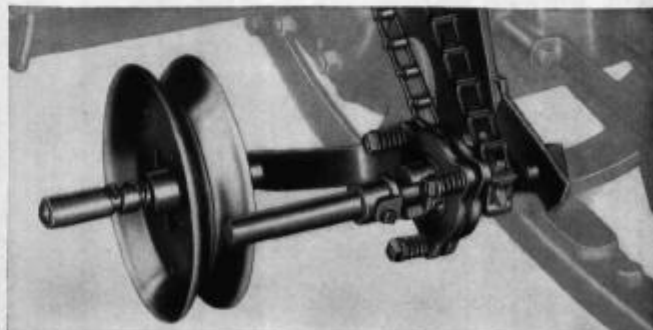


Illust. 4 — The checkwire reeling unit is regularly supplied with the C-220 checkrow planter and includes a level-winding sheave. The unit is quickly mounted on the tractor and is chain-driven from a sprocket on the tractor. It leaves the drawbar free for other work. In this view it is taking up the wire . . . the wire running through the guide eye located at the front of the planter.



Illust. 2 — Two spring-balanced payout stakes are supplied with the C-220 checkrow planter to maintain a uniform tension on the checkwire and assure a straight cross-check right up to the ends of the rows. Here the spring arm is in position back of the notch . . . holding the wire taut.

Illust. 3 — As the planter nears the end of the row, the spring arm swings toward the planter, coming free of the notch, and the spring action eases the tension of the wire.



Illust. 5 — The checkwire reeling unit with the reel removed. The reel revolves on the shaft and engages in the notches of the slip-clutch. When paying out the wire the stop-latch, shown at the right, is pivoted to engage the sprocket and keep it from turning. The slip-clutch maintains a constant tension on the wire and prevents the reel from paying out too much wire. When reeling in the wire, the stop-lever is disengaged, and the slip-clutch prevents undue tension on the wire as it is being reeled in. The sheave distributes the wire evenly on the reel.

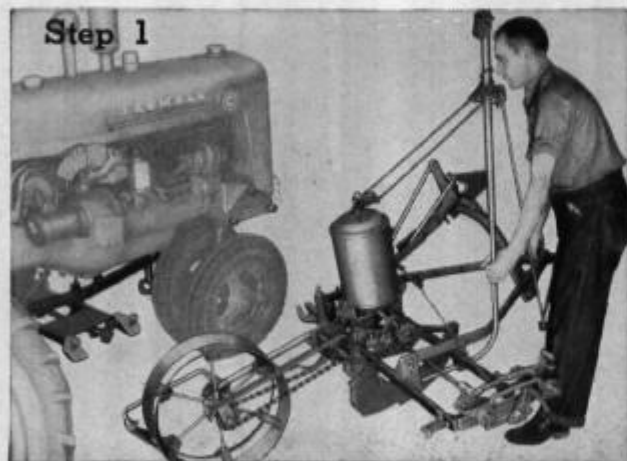


Farmall C Forward-Mounted Corn Planters

C-220, C-221 and C-222 Two-Row (Continued)



Quick and Easy to Attach



Illustr. 1—
After attaching
the left-
hand unit to
the tractor,
roll the right-
hand unit into
position.

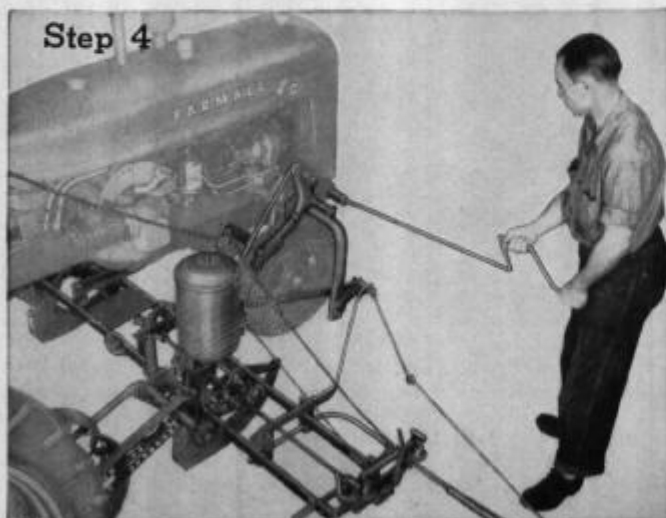


Illustr. 2—Line up the center frames of the two units and slide the slotted brackets of the right-hand unit into the quick-attaching bolts of the left-hand unit.



Illustr. 3—Tighten the quick-attaching bolts on the center frames. This brings the front slotted bracket of the planter unit into position for attaching to the tractor mounting pad.

Illustr. 4—After slipping the front slotted bracket of the planter onto the taper-headed bolts on the tractor mounting pad, tighten the bolts.



Illustr. 5—Attach the lift-control rod to the Touch-Control pivot arm on the tractor and secure with the convenient slip-in pin. Then place the marker chain in the chain slide on the steering column.



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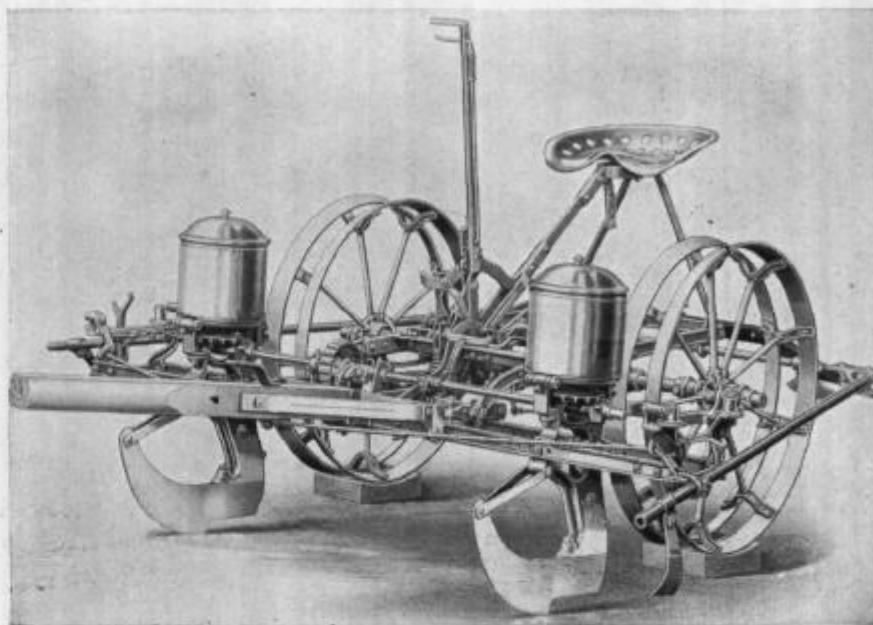
PRINTED IN UNITED STATES OF AMERICA — MARCH 1948



Horse-Drawn Corn Planters

Nos. 202, 203 and 205 Two-Row

- Checkrow, power hill - drop and drill planters.
- Easy-riding . . . convenient controls.
- Strongly built for accurate planting.
- Plant any size and shape of hybrid corn and many other types of seeds.



Illust. 1 — No. 202 checkrow corn planter with full-runner furrow openers.

These two-row, horse-drawn planters are of the same general construction as the heavier, tractor planters . . . strongly built for accurate planting. The No. 202 is a versatile checkrow planter that can also be used for power hill-drop and drill planting. The No. 203 is a simple, economical drill planter. The No. 205 is a power hill-drop planter that can also be used for drill planting.

They are adjustable for row spacings from 28 to 48 inches, hill-drop spacings from 28 to 43 inches, and drilling distances from 3½ to 58 inches. Speed change attachments are available for additional drilling distances.

Strongly Built for Accurate Work

The frame is hot-riveted and the front frame rails are bound together at seven different points, preventing twisting of the frame and holding all working parts in perfect alignment. A convenient screw-type adjustment permits leveling one runner in relation to the other. The depth control lever, within easy reach of the operator, provides a fine, accurate control of planting depth and raises and lowers the planter for transporting and turning. Short coupling between the wheels and the furrow openers keeps the openers working at the planting depth desired.

The seat is large and comfortable, and can be adjusted to suit the operator. A spring connection between the front and rear frames provides cushioning against vibration of the furrow openers.

The markers are automatic — a great time saver. High-speed boots, variable drop, dependable clutch, versatile seed hoppers, and the wide variety of furrow

openers and special equipment described in the Features and Equipment pages contribute to the effectiveness of these dependable horse-drawn corn planters.

Regular Equipment

Corn hoppers. Two pairs of seed plates as ordered. Full-runner, stub-runner, single-disk or double-disk furrow openers as ordered. Shoe-type markers. Stiff tongue, tongue truck, or tractor hitch as ordered.

No. 202 Checkrow Planter: reel and 80 rods of check-wire with buttons spaced as ordered (28 to 48 inches at 2-inch intervals); two anchor stakes.

Special Equipment

Tomato seed plate package. Pea attachments for use with corn hoppers. Combination corn and pea hopper attachment. Grooved hopper bottom plate attachment for use with extra large kernels or seed at high tractor speeds.

Speed change sprocket attachment. Slow-speed sprocket attachment for reducing the speed of the drill shaft when drilling at spacings of 14 inches and over. Nos. 6 and 10 blade furrowing attachments.

Specifications

No.	Description	Net Weight* (Approx.)
202	Checkrow Planter.....	545 lb.
203	Drill Planter.....	400 lb.
205	Power Hill-Drop Planter.....	439 lb.

*With full-runner furrow openers.



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Horse-Drawn Corn Planters

Nos. 202, 203 and 205 Two-Row (Continued)



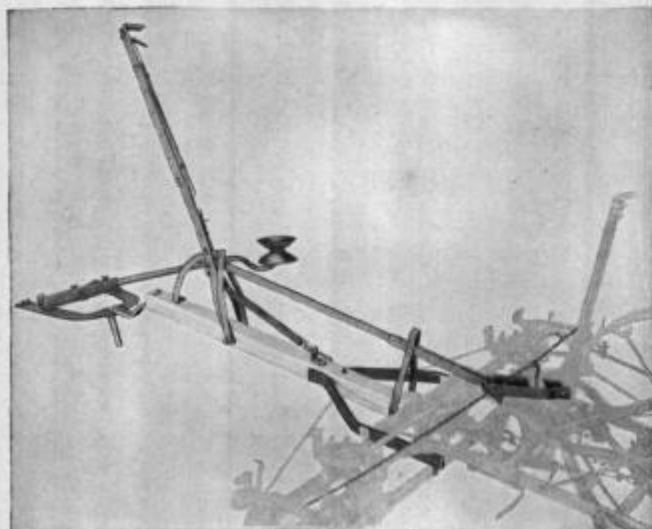
Illust. 1 — The No. 203 drill planter with full-runner furrow openers. This planter has straight-type boots.

Special Equipment (Continued)

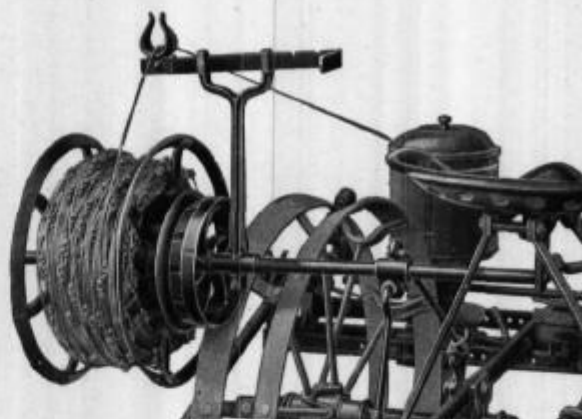
Nos. 7, 8 and 9 disk furrowing attachments. Nos. 4 and 11 gauge shoe attachments. Nos. 12 and 13 covering blade attachment. Disk markers. Level-winding sheave attachment. Adjustable checkheads. Spring-balanced payout stakes (see page 191-L for illustration).

Fertilizer attachment with split-row and single-row delivery boots for Nos. 202, 203 and 205 planters. Hopper feed wheels for light, medium or heavy application.

Tongue truck with either steel wheel or pneumatic-tired wheel as ordered. Tractor hitch. Stiff tongue.



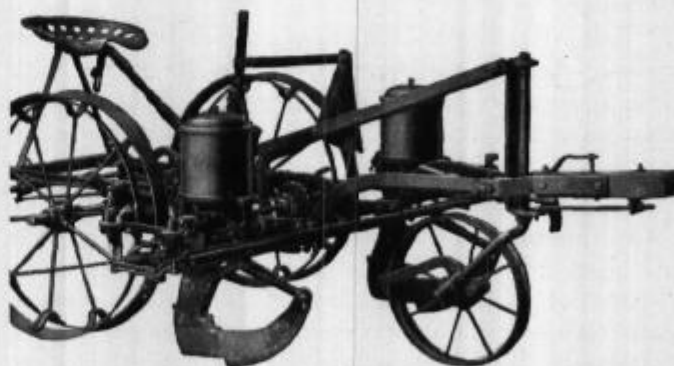
Illust. 2 — Tractor hitch for attaching No. 202 checkrow planter to Farmall tractor. Permits control of the planter from the tractor seat. A similar hitch is available for Nos. 203 and 205 planters, but without sheave, special checkhead trips, and reel tension device. These hitches can be used on Nos. 102 and 106 planters by replacing the variable-drop shifter bracket extension with a new one (3224 A). This new bracket does not interfere with the control lever extension.



Illust. 3 — A side-mounted reel and 80 rods of checkwire are regular equipment on the No. 202 checkrow planter.



Illust. 4 — A level-winding attachment for automatically feeding the checkwire level across the reel, is available as special equipment.



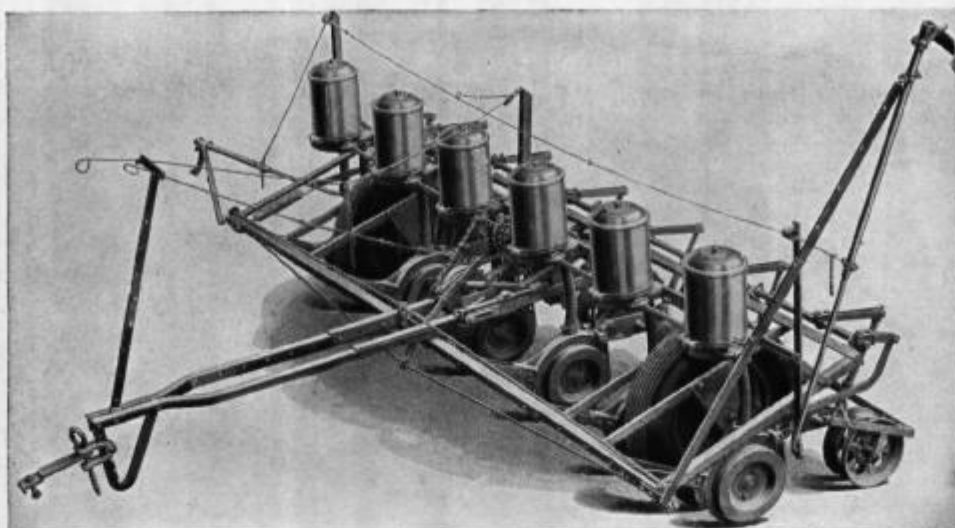
Illust. 5 — A tongue truck hitch is available for Nos. 202, 203 and 205. It eliminates neckweight and assures uniform planting depth under adverse conditions. These hitches can be used on Nos. 102 and 106 planters by providing an adapter package.



Illust. 6 — The tongue truck can also be supplied with pneumatic-tired wheel in place of steel wheel shown above.



No. 40 Series Beet, Corn and Bean Planters



Illust. 1—The No. 42 is a 6-row planter. It can readily be converted to a 4-row. Controls for the power lift and shoe-type markers are within easy reach of the operator. The pneumatic-tire wheels enable the owner to utilize old automobile tires of popular size.

- Plates fully interchangeable.
- Wide variety of row spacings.
- Accurate depth control.
- Power lift.

The No. 40 series planters are 4 and 6-row trailing machines with corn planter-type hoppers that will plant beets (either segmented or whole burr), beans, soybeans, corn, and many kinds of small seed.

The planters are fully adjustable for a wide variety of row spacings. The No. 40 comes with a short frame designed for 4-row work. The Nos. 41 and 42 have a long frame which is adaptable for either 4 or 6-row operation. Spacings for each machine and markers required are shown in the table on the next page.

Regular Equipment

Hoppers: Equipped with cut-offs and knockers either for segmented beet seed, or for beans, corn, whole beet seed, etc., as ordered.

Wheels and ground equipment: Wheels for 6.00 x 16-in. pneumatic tires (less tires and tubes). Double disk furrow openers (with choice of two out of three sizes of depth drums), or runner-type furrow openers, as ordered. Concave or flat tire press wheels, as ordered. Markers for various row spacings, as ordered (see table of Row Spacings).

Special Equipment

Hopper bottom equipment, as extra, for segmented beet seed, or for beans, corn, whole beet seed, etc. Brush cut-off for small and tender seed. Steel wheels in lieu of pneumatic type. Seat attachment.

Planter conversion units: Units to convert 4-row No. 40 (short frame) to 6-row, or to convert 4-row No. 41 (long frame) to 6-row (special marker not included).

Fertilizer attachment: 4-row with large or regular capacity hoppers for No. 40. 4-row with large capacity hoppers for No. 41. 6-row with large or regular capacity hoppers for No. 42. Additional units for use with planter conversion units.

Duplex hitch: For two No. 40 planters converted to 6-row (18-in. spacing only). For two No. 41 planters converted to 6-row, or for two No. 42 planters—18, 20, 22 and 24-in. spacing only. (Not available for 4-row No. 40, 4-row No. 41 or No. 42 converted to 4-row.)

Irrigating shovels for making furrow between alternate seed rows, or between every row (see table, next page).

Specifications

Description	No. Rows	Openers	Net Weight* (Approx.)
No. 40 Beet and Bean Planter . . .	4	Double disk	995 lb.
No. 40 Beet and Bean Planter . . .	4	Runner	931 lb.
No. 41 Corn and Bean Drill	4	Double disk	1112 lb.
No. 41 Corn and Bean Drill	4	Runner	1048 lb.
No. 42 Beet and Bean Planter . . .	6	Double disk	1242 lb.
No. 42 Beet and Bean Planter . . .	6	Runner	1146 lb.
No. 275 Fertilizer Att. for No. 40.	4	.....	182 lb.
No. 277 Fertilizer Att. for No. 41.	4	.....	192 lb.
No. 276 Fertilizer Att. for No. 42.	4	.....	274 lb.

*With wheels for pneumatic tires, less tires and tubes.



No. 40 Series Beet and Bean Planters

(Continued)

Accurate Placement of Seed

The furrow openers, available in both runner and double-disk types, are designed for maximum control of planting depth under widely varying conditions. Each gang is controlled by a single pressure rod which can readily be adjusted to regulate the distribution of pressure between furrow opener and press wheel.

The double-disk openers are supplied with two sizes of interchangeable depth bands, the one for shallow planting, the other for deep. A medium size drum is also available. The disks are so designed that the seed is discharged *ahead* of the hub. Aided by the downward movement of the disks, seed is thus deposited in the deepest part of the furrow, where there is a minimum of soil disturbance.

The planters have a wide range of planting rates—there are six sprockets on the seed shaft and two on the countershaft, providing a total of twelve speeds. A chain tightener is provided for easily changing the settings—the chain does not have to be "broken" and the sprockets always remain in place.

A screw-type regulator provides accurate adjustment for pressure on the furrow openers. The power lift, controlled by a rod within easy reach of the operator, raises the gangs to full height regardless of the depth adjustment. It is driven by roller-type chains from the ground wheels.

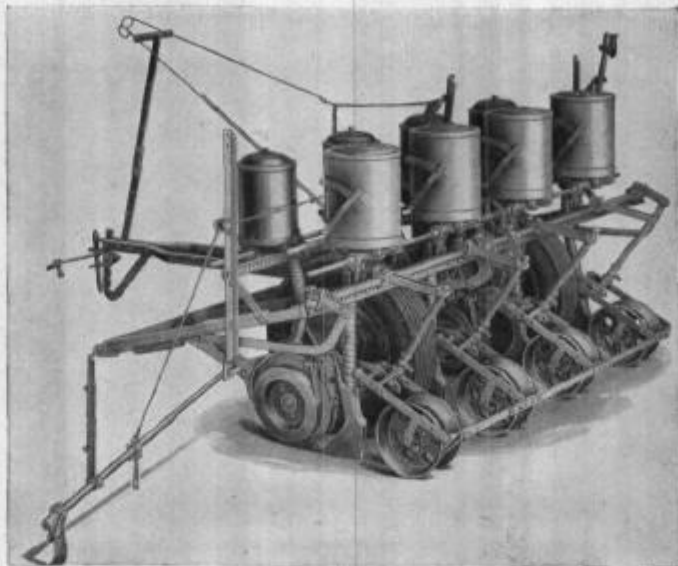
Row Spacings

Planter	No. Rows	Row Spacings (Inches)	
		With Regular Marker	With Special Marker
No. 40	4	18, 20, 22, 24 alt. 18 and 22 alt. 18 and 26 alt. 20 and 24	26, 28, 30
No. 40	6*	.....	18
No. 41	4	34, 36, 38, 40	26, 28, 30, 32
No. 41	6*	24	18, 20, 22 alt. 18 and 22 alt. 18 and 26 alt. 20 and 24
No. 42	6	18, 20, 22 alt. 18 and 22 alt. 18 and 26 alt. 20 and 24	24
No. 42	4†	26, 28, 30, 32	34, 36, 38, 40

* Two-row equipment added. † Two-row equipment removed.



Illust. 1—Cutaway view of the 82-hole segmented beet seed plate, special cut-off pawl and roller-type knocker. A wide range of sprocket speeds permits planting the seed at rates as low as two pounds to the acre.



Illust. 2—No. 40 four-row planter with fertilizer attachment. The No. 40 has a shorter frame than Nos. 41 and 42. Addition of two conversion units adapts the No. 40 for 6-row operation (18-in. spacings).

Irrigating Shovels Required (Special Equipment)

	Nos. 40 & 41		No. 42	
	Alternate Rows	Every Row	Alternate Rows	Every Row
Center mounting type...	1	1	1	1
Wheel mounting type...	2*	2	2	2
Front rail mounting type	2*	2	.....	2

* Use wheel mounting type if wheels are between the two end furrow openers; use front rail mounting type if wheels are outside the end front openers.



Illust. 3—(above left)—Runner-type openers are regularly equipped with flat tire press wheels, but can be supplied with concave tire press wheels when so ordered.

Illust. 4—(above right)—Double-disk furrow openers come with concave tire press wheels as regular equipment or with flat tire when so ordered.



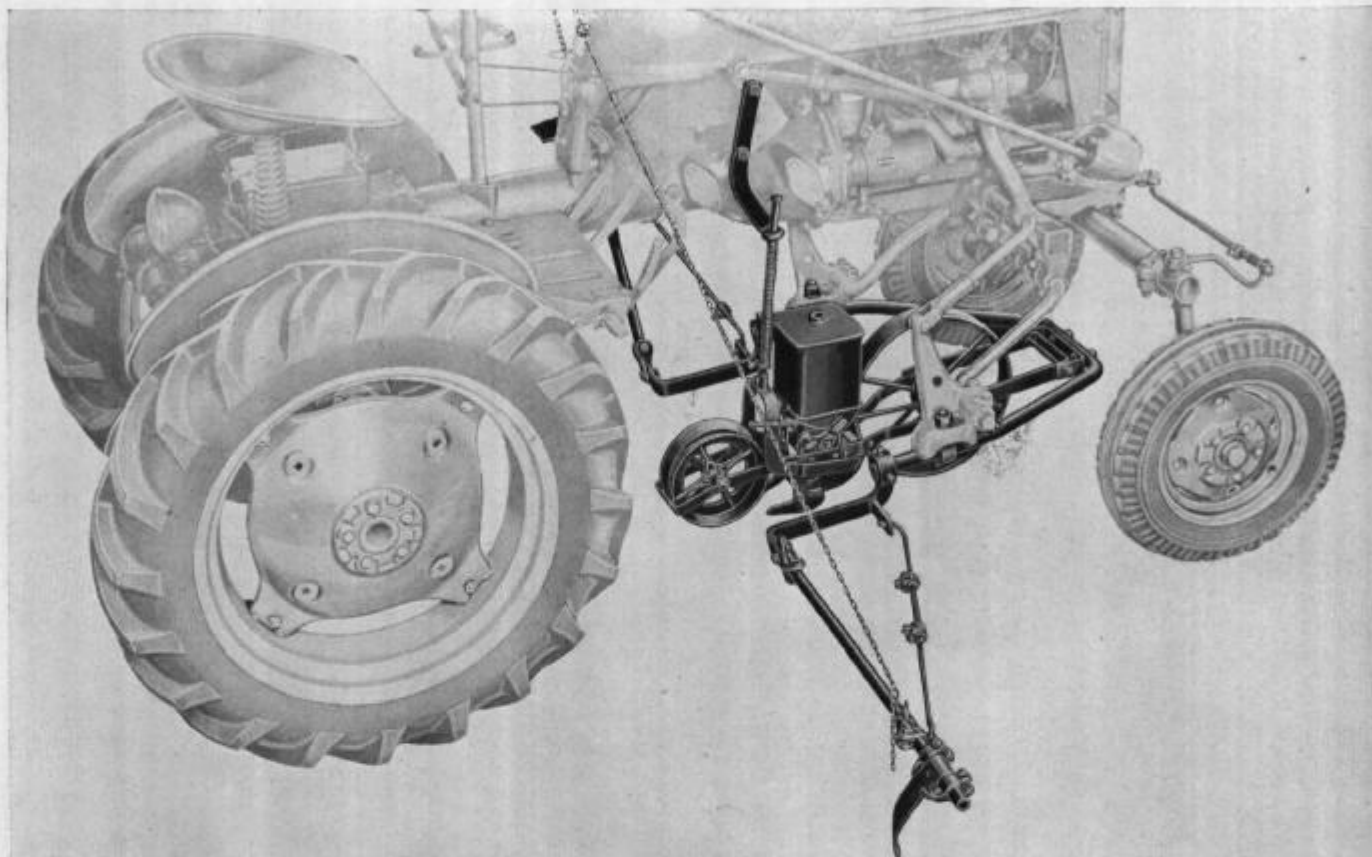
Illust. 5—(right)—The fertilizer boot is of narrow design to avoid disturbing either the seed or the seedbed below.



Farmall Cub

Cub-135 Vegetable Planter

One-Row, Forward-Mounted



Illust. 1— The Cub-135 one-row, forward-mounted vegetable planter, including one Planet Jr. unit. The shoe-type marker is special, and a rear track sweep may also be obtained as special equipment. The regular rear section of the Cub-144 cotton and corn cultivator may be used.

- Designed for a small acreage of vegetables.
- Plants most any type of vegetable seed.
- Simple and easy to operate.
- Automatic throw-out when planter is lifted

Regular Equipment

One ground unit consisting of runner shoe, gauge wheel, press wheel coverer, and lift and pressure rod. One Planet Jr. type hopper with seed plates.

Special Equipment

Marker (shoe type). Rear track sweep consisting of two gang beams, each carrying a friction trip and sweep.

The Cub-135, one-row, vegetable planter is built for forward mounting on the Universal Mounting Frame of the Farmall Cub tractor. It includes every element for successful planting of all types of seeds. For a description of the Planet Jr. seeding unit, refer to the Cub-435 vegetable planter which employs identical ground-driven, independent units. All features of the Cub-435 individual units apply to this planter. Only the number of planter units and their mounting position differ.

Specifications

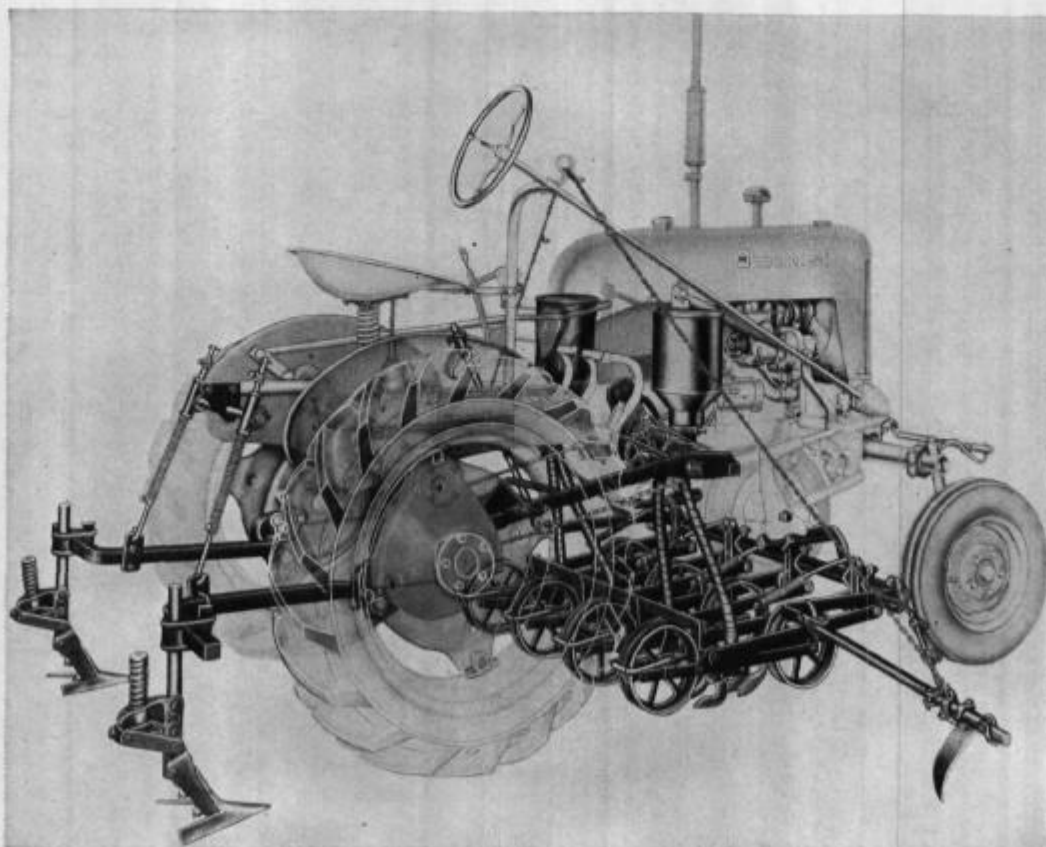
Planter No.	No. of Rows	UNIVERSAL UNITS REQUIRED		Net Weight (Approx.)
		Touch-Control	Manual Control	
Cub-135	1	No. 511 892 R91 Universal Mounting Frame	No. 511 892 R91 Universal Mounting Frame No. 511 894 R91 Front Rockshaft No. 511 893 R92 Raising Lever and Rear Rockshaft	80 lb.



Farmall Cub

Cub-474 Vegetable Planter

Four-Row, Forward-Mounted



Illust. 1 — The Farmall Cub-474 four-row vegetable planter shown with a shoe-type marker and Cub-144 Cultivator rear section.

- Accurate planting, controlled by gauge wheels.
- Adjustable spacing of planter units.
- Quick-change mounting.
- Planter units float independently upon a common crossbar.
- Raised and lowered by either Touch-Control or manual control.
- Plants four 12-inch rows, three 16 or 18-inch rows, or two 22 or 24-inch rows.
- Hopper seed plates for most types of vegetable seeds.

Regular Equipment

Two Planet Jr. hoppers with necessary quick-change supports and driving mechanism. Four individual row

units with runner-type openers, gauge wheels, press wheels, blade coverers, and pressure springs.

Special Equipment

Jockey bars (package of three) for 8 and 10-in. unit spacing when 4 and 5-in. rows of such crops as radishes are desired. Shoe-type marker. Hopper frame extension for planting four 22-in. rows (requires special marker).

Specifications

Planter No.	No. of Rows	UNIVERSAL UNITS REQUIRED		Net Weight (Approx.)
		Touch-Control	Manual Control	
Cub-474	4	No. 511 892 R91 Universal Mounting & Frame	No. 511 894 R91 Front Rockshaft No. 511 893 R92 Raising Lever and Rear Rockshaft	283 lb.



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Farmall Cub

Cub-474 Vegetable Planter

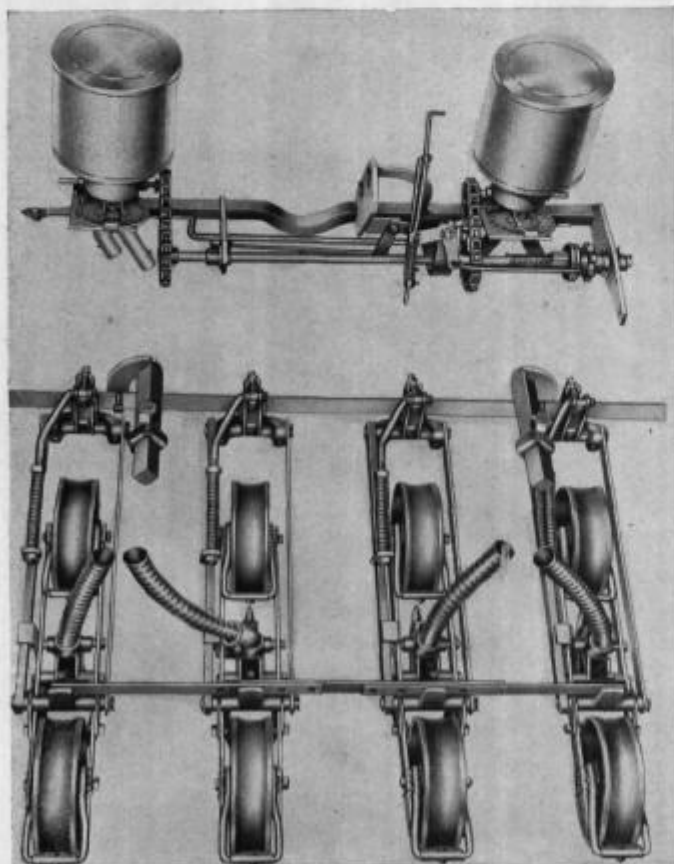
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The Cub-474, four-row, vegetable planter forward mounts on the Farmall Cub tractor. It includes every essential for successful planting of all types of seed. It consists of a planter ground unit composed of four individual row units and two hoppers (Planet Jr. Type). It is recommended that the Cub-474 planter be used on tractors equipped with adjustable front axles; it can then plant four 12-in., three 16-in. or 18-in., two 22-in. or 24-in. spaced rows; or rows spaced 4 or 5 inches wide by planting in between the rows. These closely spaced rows do not permit multiple cultivation. Special parts are available for planting four 22-inch rows. The planter can be used on tractors equipped with the fixed front axle but then only three 12-in. or two 16-in., 18-in., or 20-in. rows can be planted.

The Ground Unit

The four individual row-units may be easily spaced on the crossbar by simply loosening the bolts and sliding the units to the desired positions.



Illust. 2—Note simplicity of the Cub-474 vegetable planter. Shown above are the two Planet Jr. planter mechanisms. Below is the ground unit composed of four row-units mounted on the main tool bar.

Each ground unit has everything that is necessary to do a perfect job of vegetable planting; a runner-type furrow opener, gauge wheel, press wheel, a coverer, and lift and pressure rod.

A simple, yet rugged pivot device, which is linked to the lift and pressure rod, allows each row-unit to float independently of the others and thus, follow the contour of the ground.

The Planet Jr. Hopper Unit

The Planet Jr. planter mechanism does a perfect job of metering the seed into the boot at the exact interval desired, thus assuring an abundant crop with a minimum of seed used. The hopper capacities are a full $8\frac{1}{2}$ quarts. The hoppers are mounted on a hopper frame which attaches to the clutch housing attaching pads on the tractor. The hoppers are driven from the seed-plate drive furnished with the tractor.

Automatic Cut-Off for Turning

Lifting the planter unit at the end of the row automatically disengages the clutch and stops the seed metering mechanism. Single and double-opening feed spouts are furnished with each planter. The feed spouts required will depend upon the number of rows the operator wishes to plant.

Single and Double Seed Plates

Six single seed plates, for use with the single spouts, and six double plates for use with double spouts, are furnished as regular equipment. A total of 33 openings in each set of three plates permits the operator to plant a variety of seeds, ranging from the tiny onion seed to the large seeds such as the bush lima bean.

Quick-Change Feature

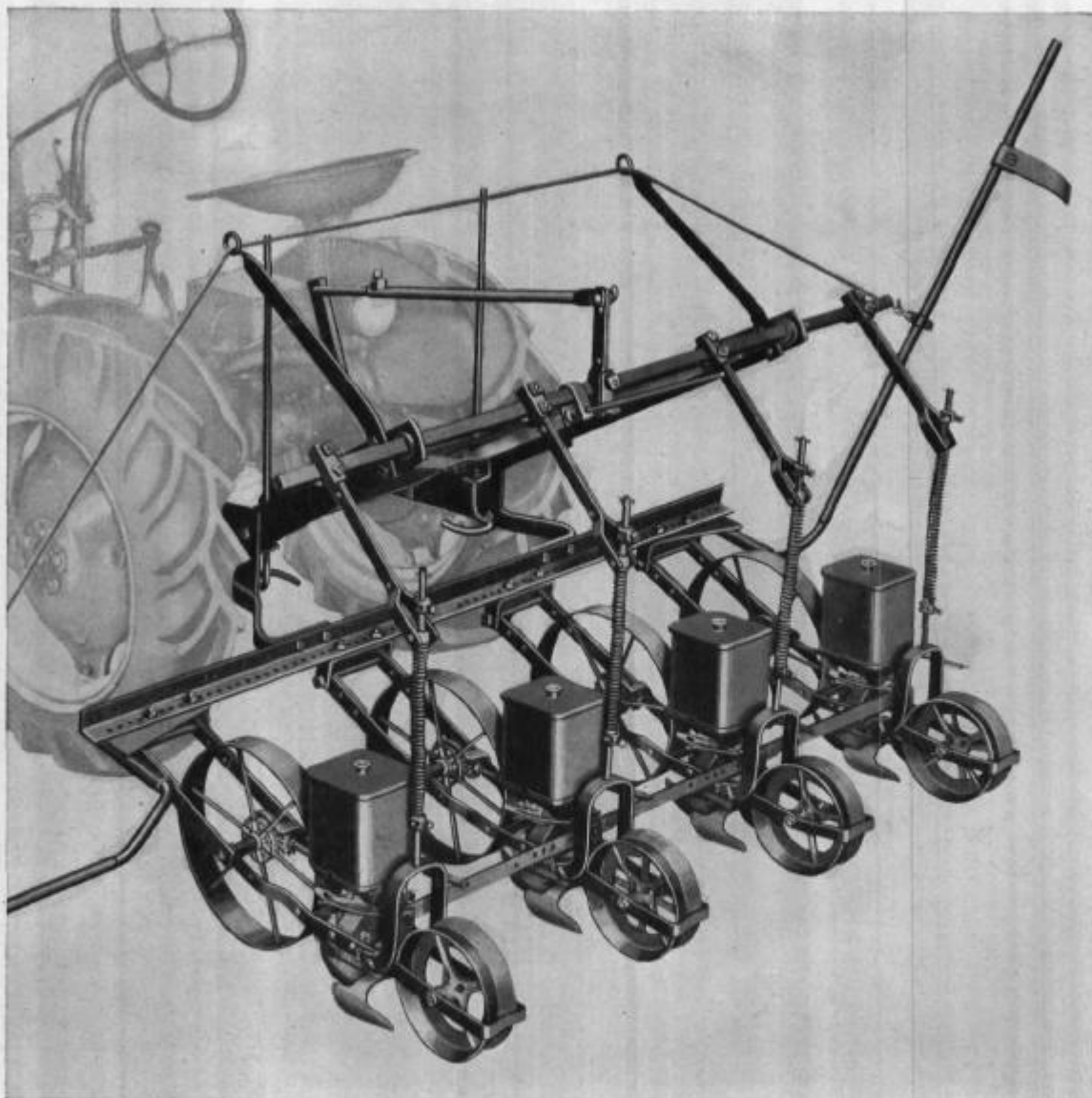
The planter may be attached or detached in a matter of minutes. Two bolts hold the hopper unit to the center tractor mounting pads. The ground unit is simply slid under the tractor, and the Universal Mounting Frame is lowered upon it. The attaching bolts are then tightened. The drive chain, clutch throw-out rod, and flexible seed tubes are quickly attached.

Ease of Operation

The Cub-474 is so simple, so well-balanced, that even a boy could operate it. The Touch-Control or Manual control lever raises and lowers the planter units. When operating on the flat, the marker attachment can be used to obtain accurately-spaced guess rows.



Farmall Cub
Cub-435 Vegetable Planter
 Four-Row, Rear-Mounted



Illust. 1 — The Cub-435 is a four-row, rear-mounted vegetable planter with a marker attachment. The planter units are easily lifted by either Touch-Control or Manual Control. Each planter unit is free to follow the contours of the ground.

- Designed especially for the vegetable grower.
- Plants most any type of vegetable seed.
- Simple and easy to operate.
- Perfect job of seed metering.
- Planter units free to follow soil contour.
- Ground drive.
- Complete planter lifts free of the ground.

Regular Equipment

Four Planet Jr. units attached to angle-iron frame and lift mechanism.

Special Equipment

Jockey link for planting 10-in. radish rows. Jockey link for planting 24- to 36-inch rows. Marker, bar-type. Planting units (Planet Jr.) (Note: From one to six planting units may be used with Cub-435 planter frame.)



Farmall Cub

Cub-435 Vegetable Planter

(Continued)



Specifications

Planter No.	No. of Rows	Maximum Planting Width	UNIVERSAL UNITS REQUIRED		Net Weight (Approx.)
			Touch-Control	Manual Control	
Cub-435	4 (6 max.)	88 in. (4 rows) 72 in. (6 rows)	No. 512 652 R92 Rear Rockshaft	No. 511 893 R92 Raising Lever and Rear Rockshaft	356 lb.

The Cub-435 is a four-row, rear-mounted vegetable planter, employing Planet Jr. units. It works as an integral unit with the Farmall Cub tractor.

Four units are furnished as regular equipment, which will plant a maximum of four rows spaced 22 inches apart. However, additional planter units may be purchased. With the additional units, it is possible to plant a maximum of five 16-inch or six 12-inch spaced rows.

The Planter

The Cub-435 consists of the planter units mentioned above, the main frame, and lifting mechanism. It is the same as the four-row planters listed for Farmalls Super-A and C, except the attaching supports. Each individual ground unit is ground driven and floats independently, following the contour of the ground. Jockey links tie units together to permit consistent row spacings. The jockey links regularly furnished permit 12-to 22-inch row spacings. Special links are available (see special equipment).

The Cub-435 vegetable planter is designed and recommended for use on tractors equipped with adjustable front axles.

The Planter Unit

Each planter consists of complete individual planting units (Planet Junior type). Each unit attaches to an angle-iron cross frame and a lifting mechanism. A Unit comprises a hopper, drive wheel, furrow opener, cover blades, press wheel, and seed hopper. The feed wheel is ground driven from the hopper-drive wheel at the front. The seed is metered through holes in easy-to-interchange seed plates. A total of 39 holes in the three sets of plates assures ample adjustment for any variety of seed. Each planter unit is free to follow the contour of the ground assuring accurate seed spacing, uniform depth, and uniform covering, thus, a full stand is assured.

Automatic Throw-Out

The planters are so constructed that when the planter units are lifted, an automatic throw-out device operates to stop the flow of seed at each hopper.

The Hopper

Each hopper holds five quarts, and the Planet Jr. mechanism does a perfect job of metering the seed into the boot at the exact interval wanted. This feature assures an abundant crop with a minimum of seed. The three interchangeable seed plates will meter almost any seed ranging from the tiny onion to such large seeds as the Bush Lima bean.

The seed plate setting is simplicity itself. All the operator has to do is open the hopper cover and select from the chart the right plate, the proper plate setting for the seed he intends to plant, and the spacing desired. Then he rotates the seed plate until the proper setting is opposite the pointer — as simple as setting a clock.

Easy to Operate

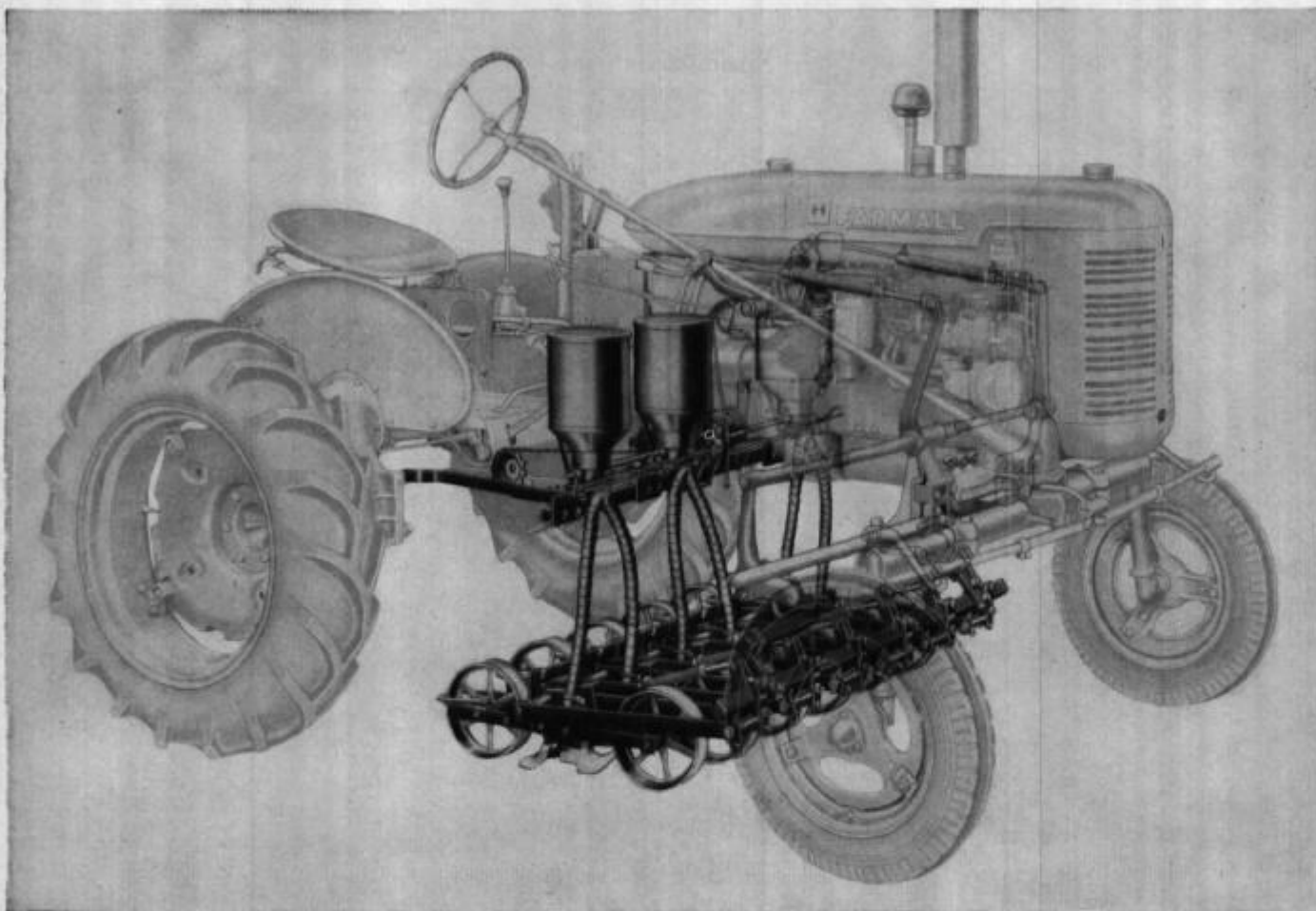
This simple, sturdy planter is extremely easy to operate. With Farmall Touch-Control, a mere fingertip touch on the small operating lever is sufficient to raise or lower the planter units.

Changing from one row spacing to another is simple and easy. It is only a matter of loosening two bolts on each of the units. They can then be slid along the tool bar from one row spacing to another. This feature is especially important for the small acreage truck farmer who raises a large variety of vegetables with varied row spacings.

Every consideration has been given to designing and building a vegetable planter which cuts to the minimum the time required for setting up and changing from one operation to another.



Farmall Super-A
A-674 Vegetable Planter
 Six-Row, Forward-Mounted



Illust. 1 — The A-674 six-row vegetable planter is easy to attach or detach. It is also so easy to handle in the field that anybody who can operate a tractor can plant with it.

- Meets the exacting requirements of the vegetable grower.
- Simple and easy to operate.
- Plants most any type of vegetable seed.
- Farmall Touch-Control for effortless raising and lowering.
- Quick-change from one operation to another, without disturbing the original setting and adjustment of the ground tools.

Regular Equipment

A-674 Ground Unit. Three Planet Junior type hoppers with three double opening discharge spouts and three single opening spouts. Required support and driving mechanism.

Special Equipment

306 06-B jockey bars for 8 and 10-in. spacing if 4 or 5-in. rows are desired for radishes.

512 714 R91 special parts to plant four 22-in. rows (requires 512 239 R91 marker attachment).

512 239 R91 marker attachment, shoe type (recommended for flat-land planting, not required for bed planting).

Specifications

Vegetable Planter	Universal Units Required	No. Rows	Row Spacing	Net Weight (Approx.)
A-674	Universal Mounting Frame	2 to 6	10 to 22-in.	284 lb.





A-674 Vegetable Planter

Six-Row, Forward-Mounted (Continued)

Plants All Seeds

The A-674 vegetable planter is designed to work as an integral unit with the Farmall Super-A tractor. It will plant most any type of vegetable seed ranging from tiny onion seeds to large seeds such as bush lima beans. When the tractor is equipped with the adjustable tread front axle, the A-674 will plant six 10-inch, five 12-inch, or four 16-inch rows with the tractor wheels, front and rear, set at 68-inch treads. A combination of other row spacings are obtained by using different tractor wheel treads. Available on special order are parts to permit planting four 22-inch rows with tractor wheels set at 44-inch treads. Small tractor tires are recommended, especially for narrow rows.

Seed Plate Drive

The seed plate drive (tractor attachment No. 350 024 R91) is required for use with this planter and is available on special order. This seed plate drive will work for all planters.

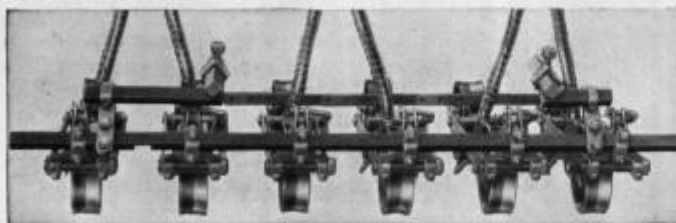
A Simple Planter

The A-674 planter comprises two primary units: (1) a ground unit consisting of six individual row units, and (2) a hopper unit consisting of three Planet Junior hoppers with seed plates and hopper drive mechanism.

The Ground Unit

Every vegetable planting essential has been incorporated into each row unit: a runner-type furrow opener, a gauge wheel, a press wheel, coverers, and a lift and pressure rod.

Spacing the row units on the main tool bar is simple and easy . . . just loosen the bolts, slide the units to the desired spacing, and retighten the bolts.



Illust. 1 — Jockey bars, which link the planter units together, permit each row unit to operate independently of each other.

A simple, rugged pivot device, linked to the lift and pressure rod, allows each row unit to float independently of the others.

Jockey bars link the units together to assure consistent row spacings. Jockey bars, for 8 and 10-inch unit spacing, which permit planting in four or five-inch row spacings, can be obtained on special order.

The Hopper Unit

The hoppers are big . . . a full 8½ quarts. One filling covers plenty of ground.

The Planet Junior planter mechanism does a perfect job of metering the seed into the boot at the exact interval wanted. This feature assures an abundant crop with a minimum of seed.

The seed plate setting is extremely simple. All the operator has to do is open the hopper cover and select from the chart the proper plate setting for the seed he intends to plant and the spacing desired. Then he rotates the seed plate until the selected setting is opposite the pointer . . . as simple and easy as setting a clock.

Three hoppers are furnished with each planter. The double opening hopper supplies seed through two spouts when planting an even number of rows. If an odd number of rows are planted, it is a simple matter to change the seed plate having double holes to one having single holes and change to a single opening discharge spout.

Six single seed plates and six double plates are furnished as regular equipment. A total of 33 openings in each set of three plates enables the operator to plant a variety of seeds ranging from the tiny seed of the onion to large seeds such as bush lima bean.

Automatic Clutch

Lifting the planting unit at the end of the row automatically disengages the clutch and stops the hopper agitator. At the same time an automatic cut-off slides under the seed plate openings and stops the flow of seed.

Quick-Change

It is but a matter of minutes to attach the planter to the tractor. Two bolts attach the hopper units to the center Tractor Mounting Pads.

Attaching the ground unit is just as simple. Just slide it under the tractor . . . using Farmall Touch-Control, lower the Universal Mounting Frame . . . slip the attaching bolts on the main tool bar support into the Universal Mounting Frame gang-heads . . . and tighten the two tapered nuts. Place the drive chain over the sprockets, and hook the clutch throw-out rod to the right hand Farmall Touch-Control power arm. Attach the flexible seed tubes to the spouts. Toss in the seed.

Easy to Operate

This simple, sturdy planter and tractor combination is so easy to operate that even a child can handle it. Farmall Touch-Control raises and lowers the units. It also shuts off the planter mechanism when not in work. When operating on beds, the outfit literally steers itself, and when operating on the flat, an easy-to-control shoe marker attachment is available.

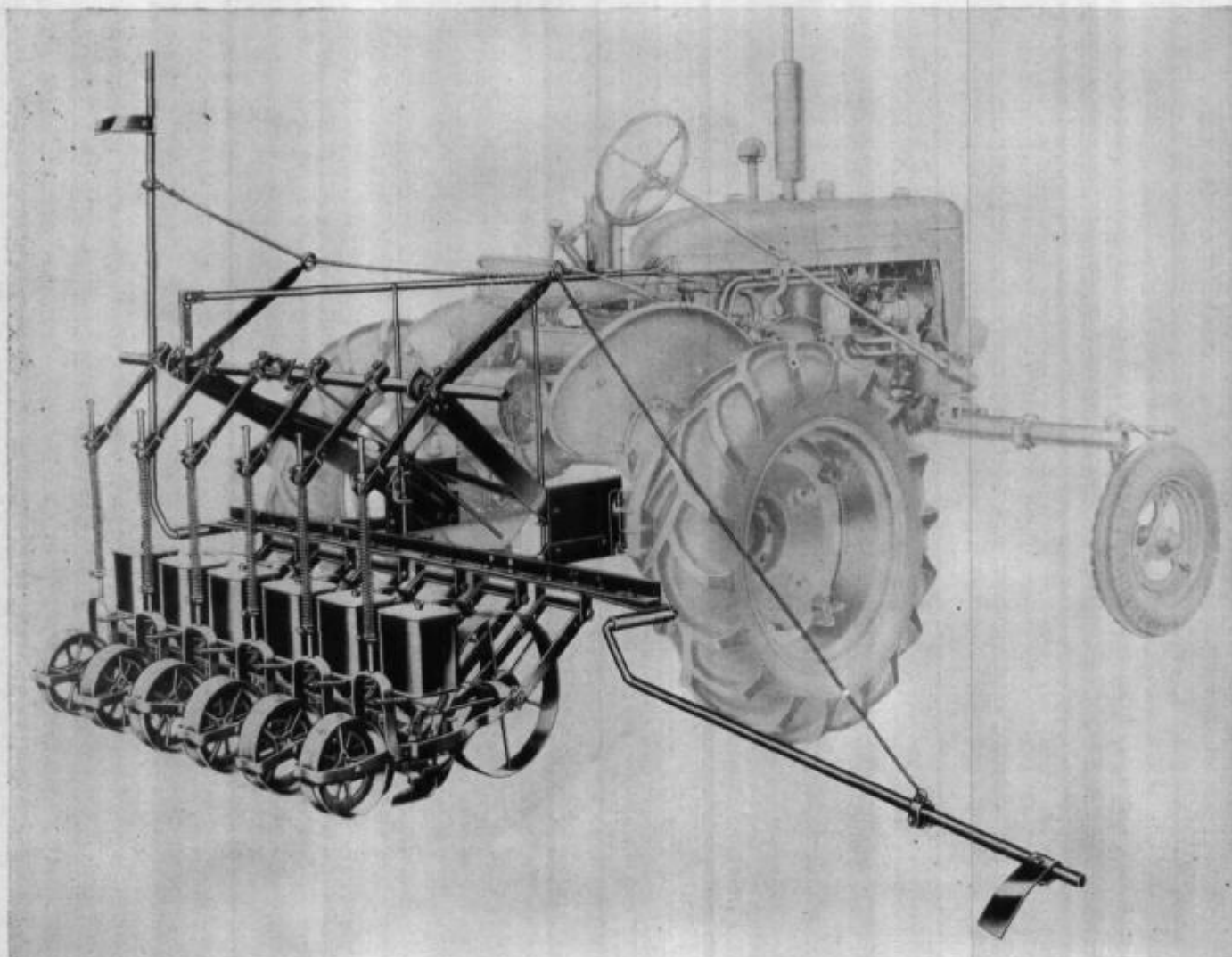
A Rear Section

The regular rear section of the A-144 cultivator can be used to remove the tractor wheel tracks while planting. This rear section can be furnished as special equipment for the planter.



Farmall Super-A Rear Mounted Vegetable Planters

A-435, Four-Row and A-635, Six-Row



Illust. 1 — The A-635 six-row vegetable planter with marker attachment. The A-435 is essentially the same but has four row units instead of six.

Regular Equipment

A-435: four planter units and the necessary support frames.

A-635: six planter units and the necessary support frames.

Special Equipment

612 949 R91, extra planting unit, for additional rows (*A-435* only). One (1) is required for each additional row desired. This package includes Planet Jr. planting unit, attaching irons, and jockey link.

514 016 R1, jockey link — required for planting 10-in. rows (3 used for 4-row; 5 used for 6-row).

PO-223 40-A, jockey link, long (for planting 24 to 36-in. rows). One is required for each spacing between planting units exceeding 22 in.

514 939 R91, marker attachment.

Specifications

No.	Description	Net Weight (approx.)
A-435	Four-row vegetable planter.....	339 lb.
A-635	Six-row vegetable planter.....	539 lb.

- Designed for the vegetable grower.
- Simple and easy to operate.
- Farmall Touch-Control for effortless raising and lowering.
- Plant most any type of vegetable seed.



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Rear-Mounted Vegetable Planters

A-435, Four-Row and A-635, Six-Row (Continued)



A-435 Four-row, Vegetable Planter

The A-435 is a rear-mounted, vegetable planter, designed to work as an integral unit with the Farmall Super-A tractor. It will plant a maximum of 4 rows spaced at 22 inches. Four planter ground units are furnished as regular equipment. Extra planter units are available on special order. With the additional planting units it is possible to plant a maximum of five 16-inch or six 12-inch rows.

A-635 Six-row, Vegetable Planter

The A-635 is a rear-mounted, vegetable planter which is designed to work as an integral unit with the Farmall Super-A tractor. Six planter units are furnished as regular equipment. This planter will plant a maximum of six rows spaced at 12 inches.

The Planter Units

Each planter consists of complete, individual planting units (Planet Junior type). Each unit attaches to an angle-iron cross frame and a lifting mechanism and comprises a hopper drive wheel, furrow opener, coverer blades, press wheel and hopper. The hopper feed wheel is driven directly by a shaft from a bevel gear on the front drive wheel. The seed is metered through holes in three easy-to-interchange seed plates. A total of 39 holes assures ample adjustment for any variety of seed. Each planter unit is free to follow the exact contours of the ground. This feature, plus seed spaced accurately at a uniform depth, and covered uniformly, assures a full stand.

Jockey Links

Jockey links tie the units together to assure consistent row spacings. The jockey links furnished regularly permit 12 to 22-inch row spacings. Available on special order are jockey links which permit 10-inch row spacings. Three are required for the A-435 and five for the A-635. In addition, a jockey link is furnished on special order which permits 24 to 36-inch row spacings.

Automatic Throw-out

The planters are so constructed that when the planter units are lifted an automatic throw-out device operates to cut off the flow of seed at each hopper.

The Hopper Unit

Each hopper holds 5 quarts. The Planet Junior planter mechanism does a perfect job of metering the seed into the boot at the exact interval wanted. This feature assures an abundant crop with a minimum of seed. The three interchangeable seed plates with a total of 39 holes will meter most any type of seed ranging from the tiny onion seed to large seeds such as Bush Lima bean.

The seed plate setting is simplicity itself. All the operator has to do is open the hopper cover and select from the chart the right plate and proper plate setting for the seed he intends to plant and the spacing desired. Then he rotates the seed plate until the proper setting is opposite the pointer—as simple and easy as setting a clock.

Easy To Operate

This simple, sturdy planter and tractor combination is so easy to operate that even a child can handle it. Farmall Touch-Control raises and lowers the units. It also shuts off the planter mechanism when not in work. When operating on beds the outfit literally steers itself and when operating on the flat, an easy-to-control marker attachment can be used.

Changing from one row spacing to another is simple and easy. It is only a matter of loosening two bolts on each of the row units and they can be slid along the tool bar from one row spacing to another. This feature is especially important for the small acreage truck farmer who raises a large variety of vegetables with varied row spacings.

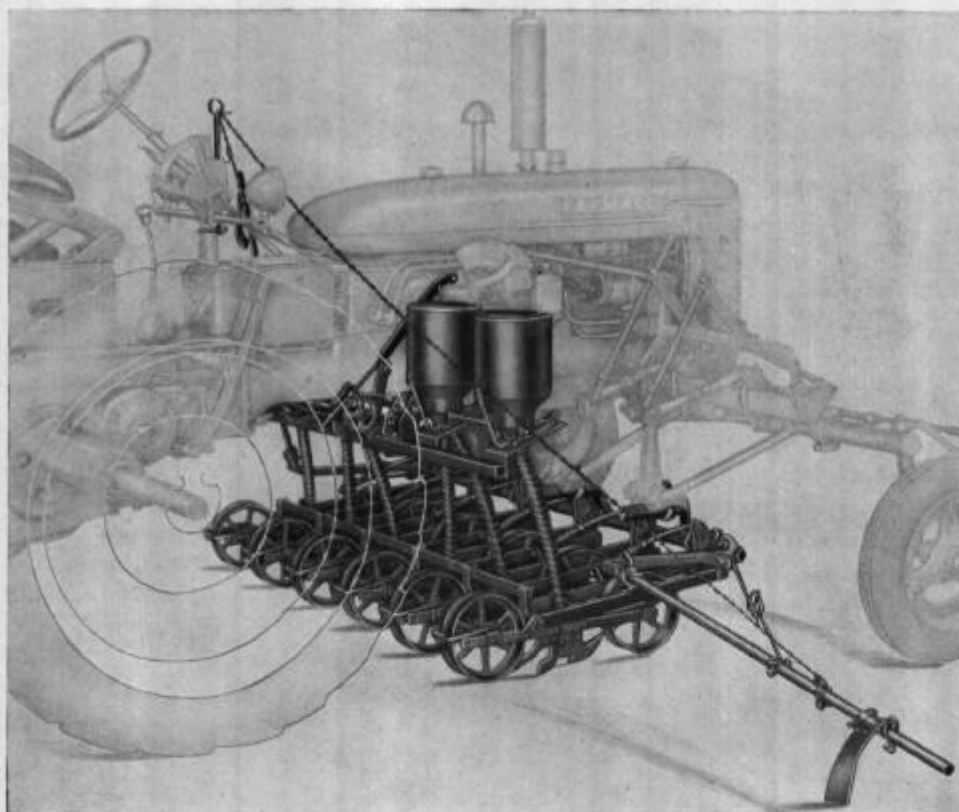
Every consideration has been given to designing and building a vegetable planter which cuts to the minimum the time required for setting up and changing from one operation to another.



Farmall C

C-674 Vegetable Planter

Six-Row, Forward-Mounted



Illust. 1 — C-674 forward-mounted vegetable planter with shoe marker attachment.

The C-674 is a six-row, forward-mounted vegetable planter designed for the Farmall C tractor equipped with wide front axle and 88-inch tread rear axle. It will plant a maximum of six 12-inch, five 14-inch and four 18-inch rows with the tractor wheels set for 88-inch tread.

The planter comprises six individual-row ground units and four hoppers with the required supports and driving mechanism. The ground units are flexibly attached to the main tool bars so that each unit is free to follow the contour of the ground, assuring uniform planting depth. The tool bars are carried by the Universal Mounting Frame. Ground units comprise a gauge wheel, runner shoe, coverers, press wheel and lift and pressure rod. Jockey bars tie the units together to assure consistent row spacings.

The hoppers are carried on a frame attached to mounting pads on the tractor clutch housing. Four hoppers (two on each side) are used with all row spacings. Each hopper is furnished with a double and a single discharge spout which are interchangeable for feeding either one or two rows as desired. Double-hole seed plates are used when feeding two rows. A locking latch holds the seed plate in position and provides a quick means of rotating the plate for planting different size seeds. Seeds ranging from tiny size up to small lima beans can be handled accurately. Large-capacity seed cans (8½ qts.) permit long runs without refilling. The rear section of the C-244 cultivator can be used to remove the tractor wheel tracks, if desired.

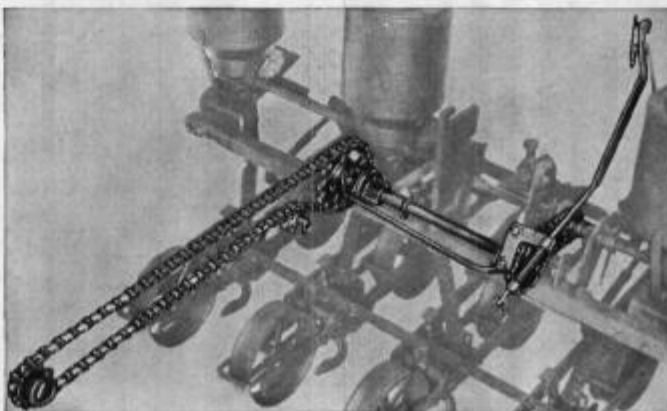
- Forward-mounted, permitting full view of work being done.
- Planter ground units raised and lowered by Touch-Control.
- Independent units with gauge wheels assure uniform planting depth.
- Highly accurate planting units (Planet Jr. type) handle all kinds of vegetable seeds.
- Big - capacity hoppers (8½ qts.)
- Positive, tractor-operated drive for hopper mechanisms.
- Planter adaptable to wide variety of row spacings.
- Cultivator rear section can be used to remove tractor wheel tracks.

Regular Equipment: Four double and four single discharge spouts. Three sets each, double and single-hole seed plates. Jockey bars for 12 to 18-inch row spacings.

Special Equipment: Jockey bars for 8 and 10-inch unit spacings (when 4 or 5-inch rows are desired for radishes). Shoe type marker attachment (for flat planting).

Specifications

Planter	No. of Row Units	Maximum Planting Area (Width)	Universal Unit Required	Net Weight (Approx.)
C-674	6	64 in.	Mounting Frame	393 lb.



Illust. 2 — The planter hoppers are chain-driven from the tractor assuring a positive, uniform drive for all units. The automatic shut-off stops the flow of seed when the planter is raised.



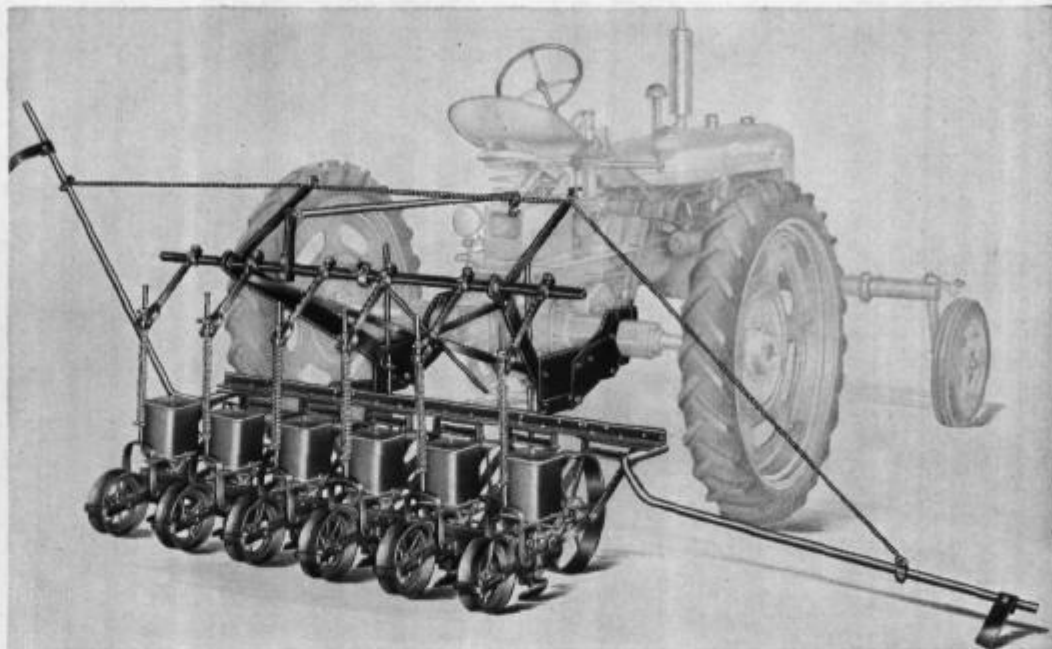
Farmall C

Rear-Mounted Vegetable Planters

C-435 Four-Row and C-635 Six-Row



Illust. 1-A — Planet Jr. type seeding unit. The seed plate has 13 holes of varying sizes, any one of which can be set quickly over the discharge opening for uniform planting of different size seeds. The runner opener and coverers are adjustable for depth. Each unit is free to follow the irregularities of the soil, thus assuring uniform depth of planting.



Illust. 1 — C-635 rear-mounted vegetable planter with marker attachment. The C-435 is similar but is equipped with four seeding units.

These are rear-mounted, quick-change vegetable planters designed for Touch-Control operation with the Farmall C Tractor equipped with wide front axle. Their multiple-row design, accurate planting and adaptability to various row spacings make them suitable for all commercial vegetable growing areas. The seeding units (Planet Jr. type) will precision-plant any vegetable seed from the smallest on up to bush limas. Each row unit is ground-driven and is independently free to follow the contour of the ground. This assures a uniform planting depth. Jockey links tie the units together to assure consistent row spacings.

These planters consist of Planet Jr. seeding units, each complete with drive wheel, runner opener, covers, and press wheel; a main frame to which the seeder units are flexibly attached; and lifting mechanism actuated from the Touch-Control power arm. An automatic throw-out operates to shut off the flow of seed as the planter is raised. The planter is quick-attached to the hexagon-shaped tractor rear axle housing by means of two convenient clamps.

Both planters have a maximum planting width (overall area) of 66 inches and are adaptable to various row spacings within the overall limitation. Jockey links furnished regular permit 12 to 22-inch row spacings. Special jockey links are available for 10-inch rows and for 24 to 36-inch row spacings. The C-435 planter is furnished regularly with four seeding units and will plant a maximum of four rows spaced up to 22 inches. The C-635 is furnished with six seeding units and will plant a maximum of six rows spaced 12 inches.

Regular Equipment

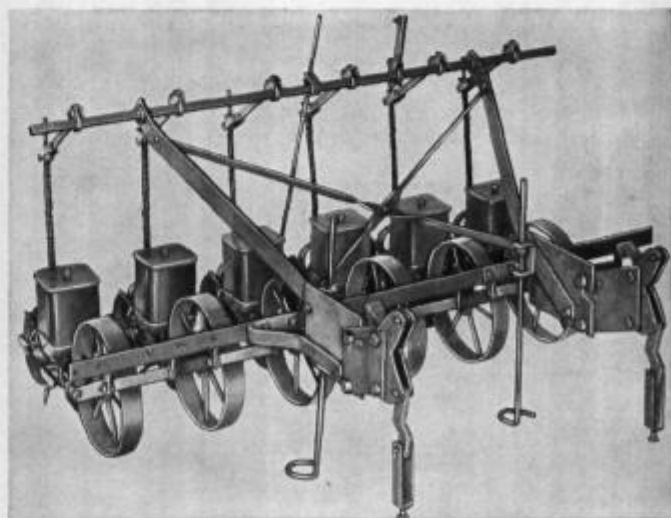
Planet Jr. seeding units (4 for C-435 and 6 for C-635), complete with three sets of 13-hole seed plates. Jockey links for 12 to 22-inch row spacings.

Special Equipment

Extra seeding units for planting additional rows (for C-435 only). Jockey links for 10-inch rows. Jockey links for 24 to 36-inch rows. Marker attachment for flat-planting.

Specifications

Planter	Row Units	Maximum Planting Width (Overall Area)	Mounting	Net Weight (Approx.)
C-435	4	66 in.	Clamped to Hexagon Axle Housing	341 lb.
C-635	6	66 in.		429 lb.



Illust. 2 — The rear-mounted planters are simple, compact units quickly attached to the tractor hexagon axle housing. Convenient stands hold the unit upright in position for quick-attaching.



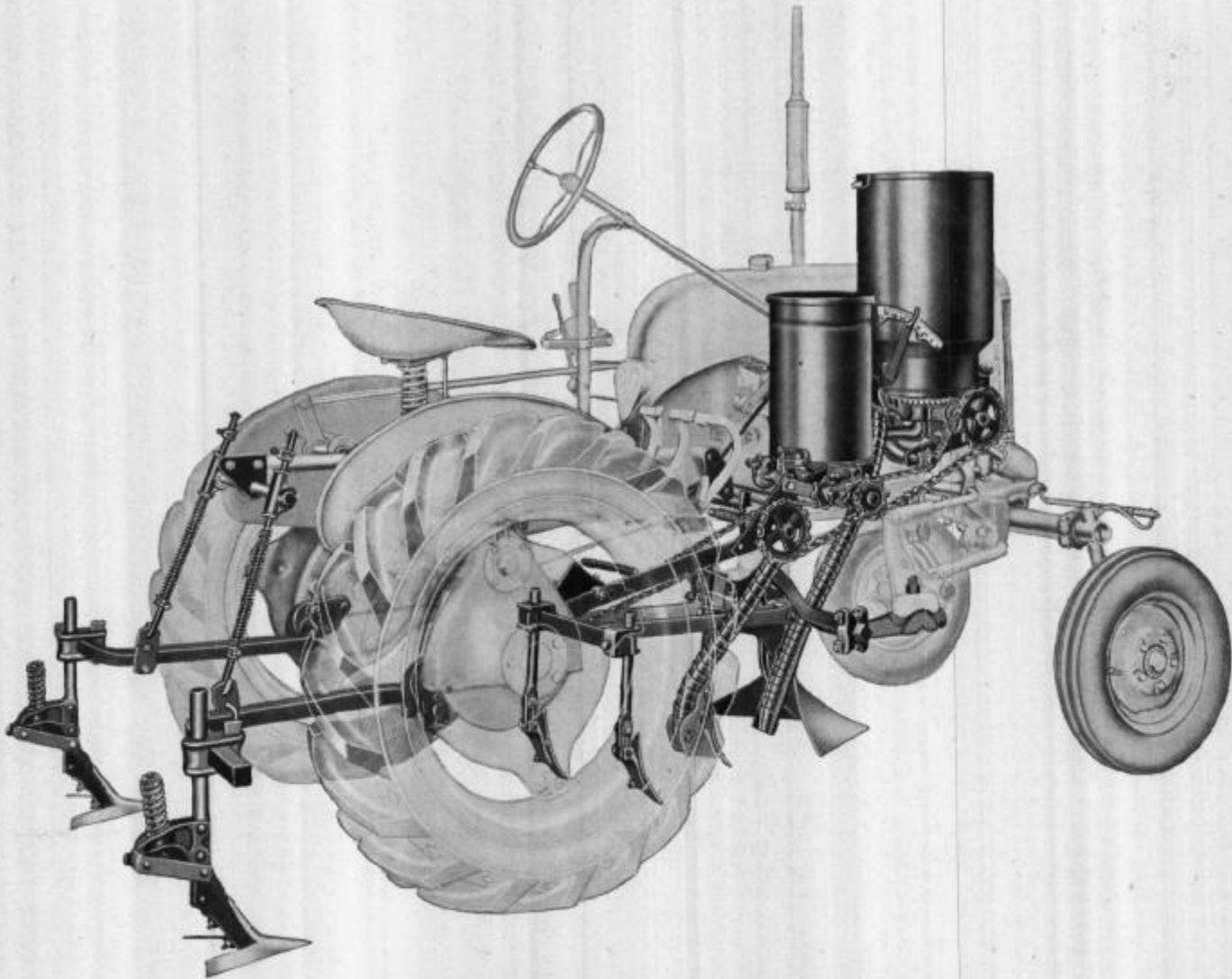
INTERNATIONAL HARVESTER



Farmall Cub

Cub-171 Blackland Planter

One-Row, Forward-Mounted



Illust. 1 — Cub-171, one-row, Blackland planter with a single-seed cotton hopper. A fertilizer unit and Cub-144 cultivator rear section are also shown.

- Simple and easy to operate.
- Plants cotton, corn and a wide variety of seeds.
- Reduces the time of seed bed preparation and planting to the minimum.
- Farmall Touch-Control or manual control.
- Quick change from one operation to another.
- Performs seven operations in one trip down the field.

Regular Equipment

Shovel opener. Shovel covers. The planter sweep is furnished only as ordered. One of the hoppers as listed in the table on page 200-A. The sprocket which attaches to the inner end of right-hand rear axle is

required to drive seed plate mechanism. This is furnished with the tractor.

Special Equipment

Nos. 7 and 8 peanut attachments for single-seed hopper. No. 14 spring trip shovel covering attachment. POSP-6399 press wheel attachment. No. 19 disk covering attachment. PO-28929 brush cut-off (for use with 3559-A seed plate) for Richmond-type corn hopper. No. 27 corn and pea attachment (for planter with Richmond-type corn hopper). No. 23 corn and pea attachment (for planter with single seed hopper). Cultivator standard attachment, friction trip for two covering shovels. Planter sweeps are available (when ordered) in widths of 14, 16, 18, 20, 22, 24, and 26 inches. PO-15081 planter sweep wing, L.H. PO-15082 planter sweep wing, R.H. Cub-53-B fertilizer attachment.

Refer to page 200-A for hopper attachments to convert the planter from one type of hopper to another and for



Farmall Cub

Cub-171 Blackland Planter

(Continued)



special equipment available for various hoppers. Special seed plates (pages 200-B and 201).

Plants on Beds

The Cub-171, one-row, forward-mounted planter is designed specifically for the farming practices in the Blackland region of Oklahoma and Texas where the soil is worked with a middlebuster and the bed cut down before planting. The sweep cuts off the top of the bed, and the seed is planted in a furrow behind the sweep. This planter works on beds spaced from 36 to 42 inches apart and will drill-plant from 8 to 12 acres per day, depending upon the row spacing. This Cub planter has the same features as the A-171 and C-271 planters.

Ground equipment for the Cub-171 planter consists of a seed furrow opener shovel and two covering shovels. A No. 19 disk covering attachment may be used. Also a planter sweep is required, but due to the fact that different sizes are required in different communities, they are furnished on special order only. A Cub-144 cultivator rear section with sweeps may be used to remove the tractor tracks if desired.

Plants Variety of Seeds

Four types of hoppers, as well as the special equipment available for each hopper, make it the ideal machine for planting cotton seed as well as a large variety of other seeds, ranging from any type of hybrid corn or large lima beans, to small tender seeds such as tomato. The planter is easy to operate and easy to mount. The clutch in the drive mechanism is a seed-saving device which stops the flow of seeds whenever the planter is lifted.

Seven Operations in One Trip Down the Field

The Cub-171 planter reduces to a minimum the time for seedbed preparation and planting. This compact

planter comprises: (1) a big front sweep which slices off the crown so that the seed is placed in moist soil; (2) a small shovel behind the sweep which opens the seed furrow; (3) the planter boot which deposits seed into the furrow; (4) the fertilizer unit, when used, which places fertilizer just ahead and to one side of the shovel furrow opener; (5) two shovels behind the boot, which covers the seed; (6) a press wheel which may be used to firm the soil around the seed; (7) shovels ahead of the sweep which may be used to work the soil on each side of the bed.

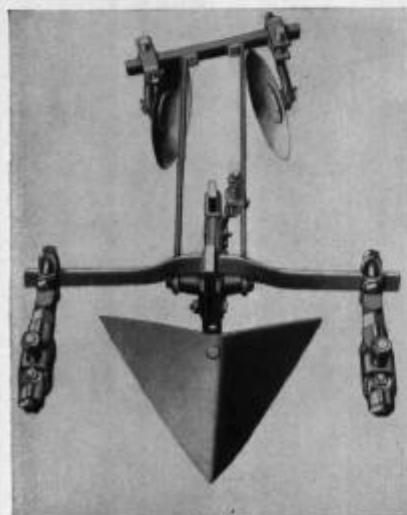
Specifications

Hoppers (As ordered)	UNIVERSAL UNITS REQUIRED		Row Spacings	Net Weight (Approx.)
	Touch-Control	Manual Control		
Type C Duplex	No. 511 892 R91 Universal Mounting Frame	No. 511 892 R91 Universal Mounting Frame	36 in. to 42 in.	170 lb.
Single Seed		No. 611 894 R91 Front Rockshaft		
POAX Reverse Feed		No. 511 893 R92 Raising Lever and Rear Rockshaft		
Richmond Type				

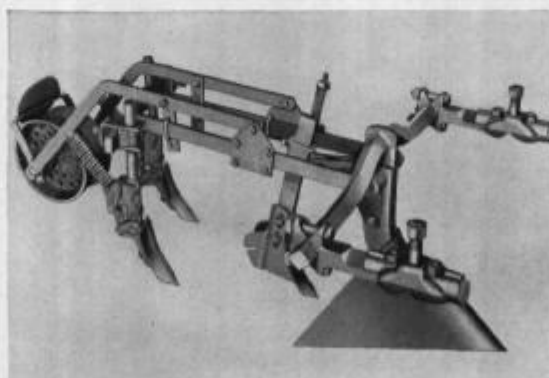
Cub-53-B Fertilizer Unit

(One-row Cub Planters and Cub-144 Cultivator)

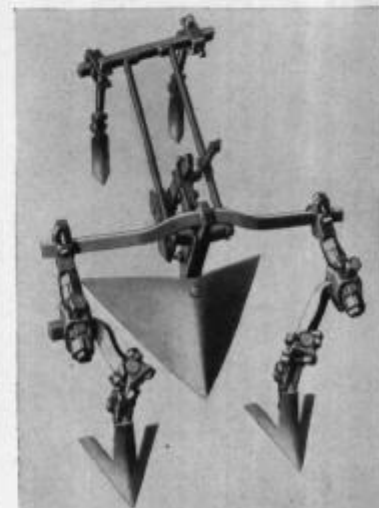
The Cub-53-B, for Cub-171 planter, is designed to place fertilizer in proper relation to the seed so that the maximum benefits are obtained. The fertilizer unit consists of a large hopper, delivery spout, and fertilizer depositing tools. An easy-to-adjust lever on a quadrant scale controls the amount of fertilizer deposited (70 to 900 pounds per acre). This same attachment can be used to side-dress the growing crops at the same time you are cultivating. A deep fertilizer applicator can be obtained as special equipment if desired.



Illust. 2—Cub-171 one-row, Blackland planter ground unit with No. 19 disk covering attachment.



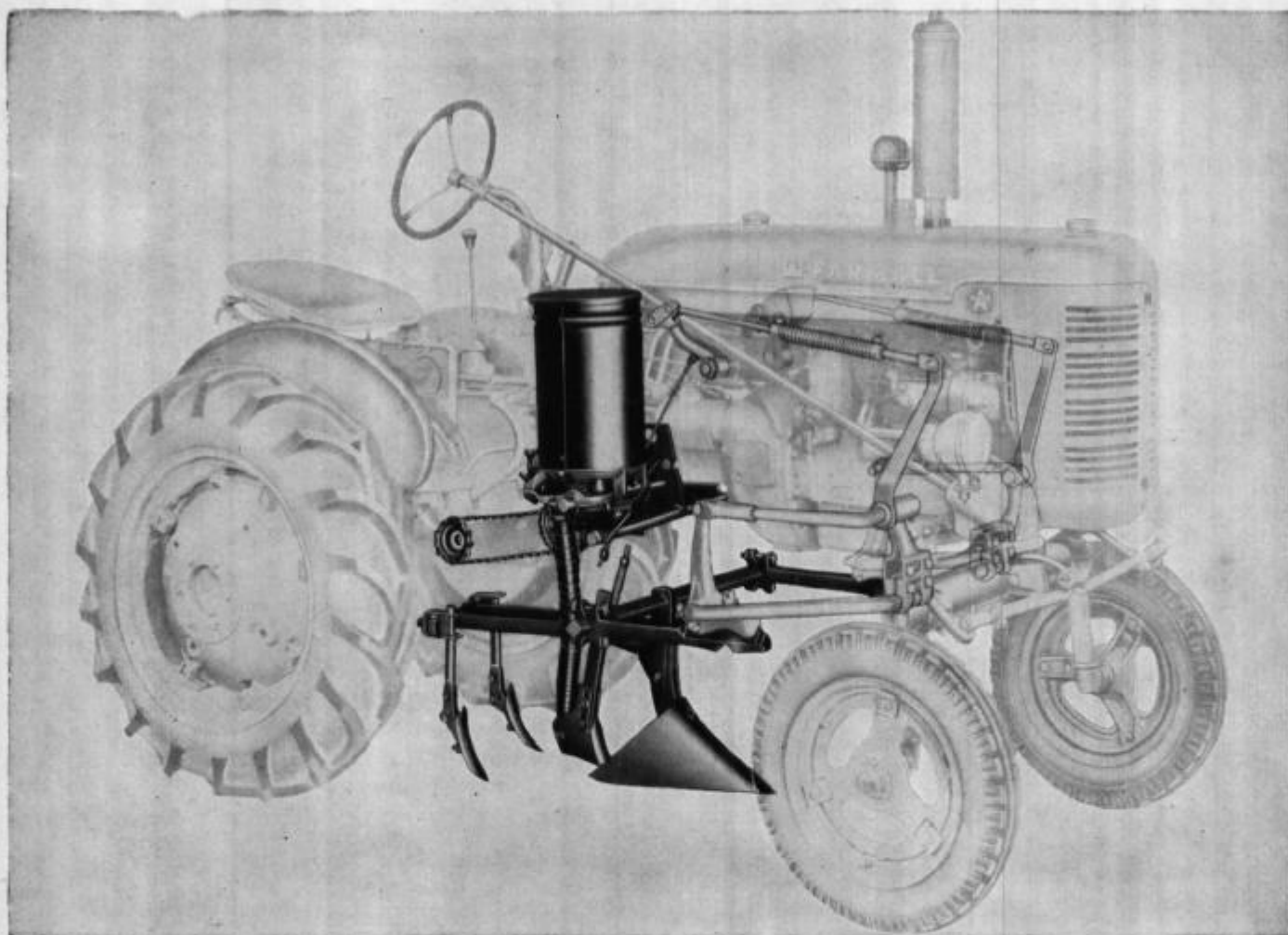
Illust. 4—Cub-171 Blackland planter unit shown with the No. 14 spring trip coverers and a press wheel attachment.



Illust. 3—Cub-171 planter ground unit shown with a cultivator standard attachment for cultivating sides of beds.



Farmall Super-A
A-171 Blackland Planters
 One-Row, Forward-Mounted



Illust. 1— The A-171 planter with single-seed cotton hopper mounted on the Farmall Super-A tractor. Four hoppers, regular as ordered, make it possible to plant most any type of seed. The large 14-inch sweep on the front and the seed plate drive on the left rear axle housing are special equipment.

- Simple and easy to operate.
- Reduces the time of seed bed preparation and planting to the minimum.
- Farmall Touch-Control for effortless raising and lowering.
- Farmall Touch-Control for accurate, instantaneous adjustments.
- Quick change.

This planter, designed to work as an integral unit with the Farmall Super-A tractor, requires one 512 280 R91 universal mounting frame. A seed-plate drive hub (tractor attachment No. 350 024 R91) is required for use with this planter and is available on special order. The planter will work in row spacings of 36 to 42 inches.

Specifications

Planter No.	Hoppers	Universal Units Required	No. Rows	Row Spacing	Net Weight (Approx.)
A-171	* Single Seed Cotton	Universal Mounting Frame No. 512 280 R91 Seed-Plate Drive hub No. 350 024 R91	One	36 to 42 in.	197 lb.

* Also furnished with POAX reverse-feed, Type C Duplex, or with Richmond type hopper when ordered.



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Farmall Super-A

A-171 Blackland Planters

One-Row, Forward-Mounted (Continued)

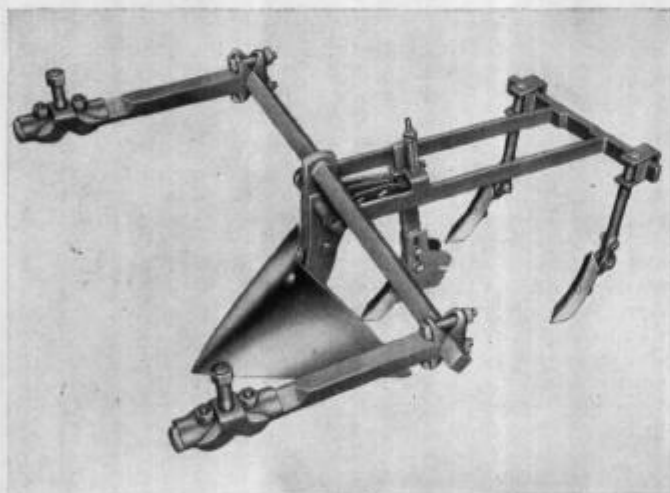


The Hoppers

The single-seed cotton hopper, the Richmond-type flat and edge-drop corn hopper, the Type "C" Duplex hopper and the POAX reverse-feed hopper are furnished for the A-171 planter as regular equipment as ordered. With various seed plate bundles, available as ordered, this machine will plant well delinted, high-quality cotton seed or all varieties of corn. With conversion hoppers as listed (see page 200-A), a large variety of seed ranging from any type of hybrid corn and large lima beans to small, tender seed such as tomato may be planted.

Ground Equipment

The regular ground unit for the A-171 consists of a shovel opener and two covering shovels. Planter



Illust. 1 — The A-171 ground unit as it is regularly equipped with the exception of the front sweep which is furnished only when ordered. Sweeps are available in sizes from 14 to 26 inches.

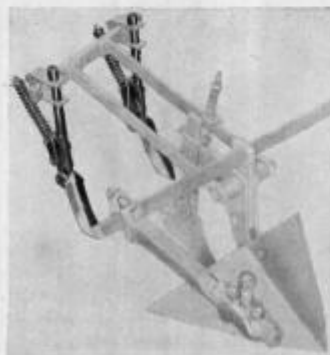
sweeps are listed under special equipment in order to give the customer a choice of size. They are priced separately and must be ordered by number as listed. The ground equipment is a compact unit which can be readily attached or detached without changing the original setting and adjustment of the ground tools. The countershaft assembly, including the hopper support and drive, is driven by the tractor seed-plate drive and attaches to the Tractor Mounting Pads on the tractor clutch housing.

Regular Equipment

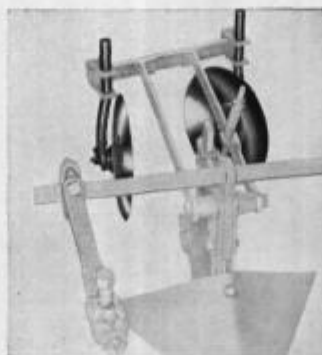
When equipped with single seed hopper the following seed plate bundles are furnished: No. 167 seed-plate bundle, for small seeds (regular for all territories). POSP-7021 cotton and corn equipment (regular for territories other than Dallas, Oklahoma City, Amarillo, San Antonio and Houston). When equipped with Richmond-type hopper two sets of seed plates are furnished as ordered (see Seed Plates, pages 191-F and G.)

Special Equipment

No. 7 peanut attachment. No. 8 peanut attachment. No. 14 spring-trip shovel covering attachment. No. 19 disk covering attachment. POSP-6399 press wheel attachment. No. 23 corn and pea attachment. 512 840 R91 cultivator standard attachment (spring trip). A-53-B fertilizer attachment. Conversion parts to provide Type-C duplex hopper. Conversion parts to provide POAX reverse-feed cotton hopper, see page 200-A. Planter sweeps are available (when ordered) in widths of 14, 16, 18, 20, 22, 24 and 26 inches. PO-15081 planter sweep wing, L.H. PO-15082 planter sweep wing, R.H.



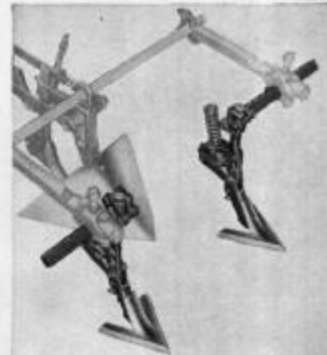
Illust. 2 — The No. 14 spring-tooth attachment is recommended in place of the regular rear shovel covers when the ground is stony or infested with noxious roots or weeds.



Illust. 3 — The No. 19 disk covering attachment is recommended where the soil is in a loosened condition. It also may be used to throw a ridge of soil over the seed.



Illust. 4 — The POSP 6399 press wheel attachment is recommended for use when it is desirable to firmly pack the soil around the seed.



Illust. 5 — The cultivator standard attachment (spring trips) is recommended for use where the soil is in a hardened and packed condition.



Farmall Super-A

A-171 Blackland Planters

One-Row Forward-Mounted (Continued)



Easy to Operate

The A-171 forward-mounted, one-row Blackland planter, when mounted on the Farmall Super-A tractor, is a perfectly balanced and matched planting unit. It is a simple, efficient planter which is designed for quick change. This planter can be mounted in a matter of minutes, and it is so easy to operate that anybody who can operate a tractor can do a perfect planting job.

Seven Operations in One Trip Down the Field

The A-171 planter is designed to reduce to the minimum the time for seedbed preparation and planting.

(1) The big front sweep (special equipment) slices off the crown so that the seed is placed in moist soil and so that weeds are killed; (2) a small shovel behind the sweep opens the seed furrow; (3) the planter boot deposits seed into the furrow; (4) the A-53-B fertilizer attachment, when used, places fertilizer just ahead and to one side of the shovel furrow-opener; (5) two shovels behind the boot cover the seed; (6) a press wheel (special equipment) may be used to firm the soil around the seed; (7) shovels ahead of the sweep (special equipment) may be used to work the soil on each side of the bed.

Track Sweep Attachment

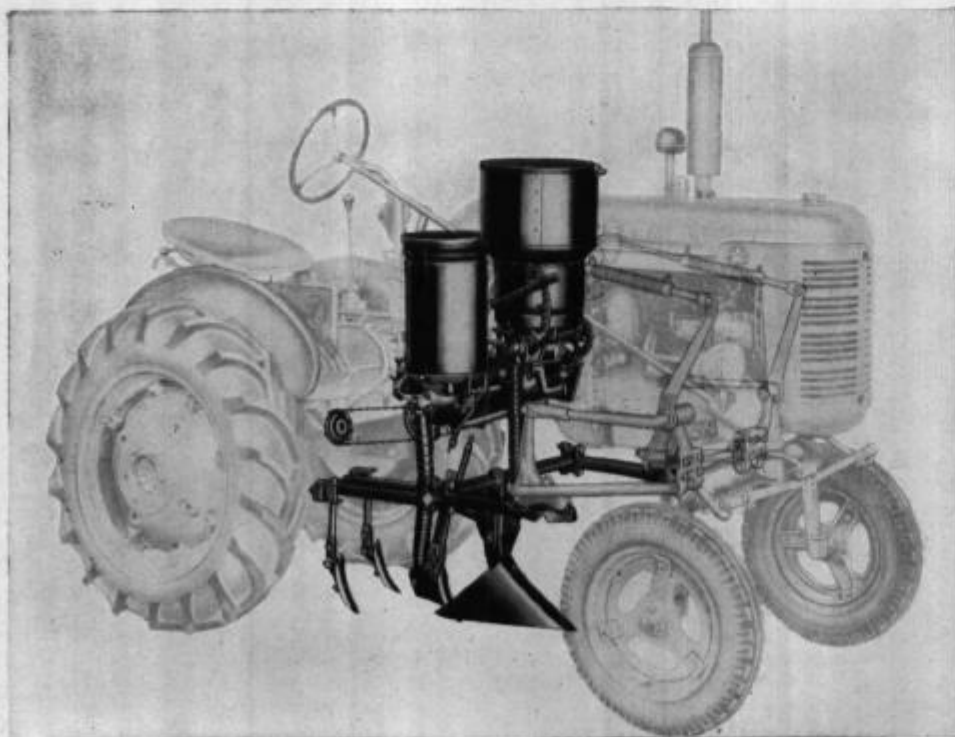
A rear track sweep attachment, consisting of two $1\frac{3}{8}$ -inch square adjustable gang beams, is available

to loosen the soil in the wheel tracks. Each gang beam carries a spring trip and sweep and is identical to the No. 28 tool equipment rear section for the A-144 cultivator. If this section is used for the removal of the wheel tracks, it will require the Universal (rigid) Rockshaft for the raising and lowering operation. It, too, is furnished only when ordered. The Universal (split) Rockshaft, designed for use with the A-189 two-way plow, will work equally well in place of the rigid rockshaft.

Effortless Control

With Farmall Touch-Control, the operator can lift, lower, and adjust the planter with just a "fingertip touch" of a tiny lever . . . move the lever forward . . . move it back . . . just a little . . . or all the way. The implement is sensitive to the slightest movement of the control lever.

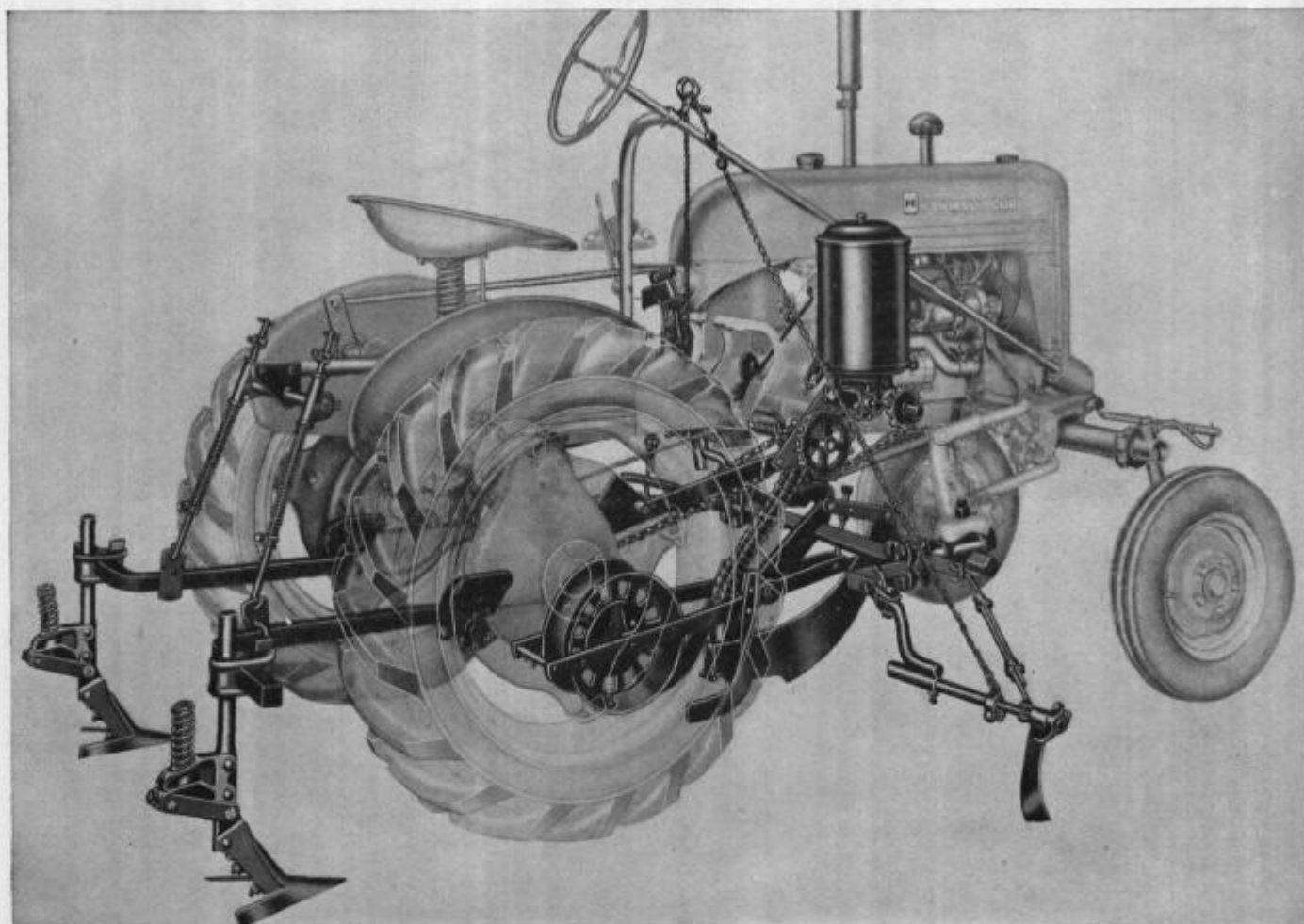
Illust. 1 — Shown here is the applicator furnished regularly with the A-53-B fertilizer attachment. A deep fertilizer applicator attachment may be ordered as special equipment. ➡



◀ Illust. 2 — The A-53-B fertilizer attachment is shown here in conjunction with the A-171 planter. The fertilizer hopper has a capacity of 65 pounds. A lever with a 40-notch quadrant makes it possible to control the amount of fertilizer deposited. A feed wheel for average delivery is furnished regularly. Two extra feed wheels, one to increase the flow and the other to decrease it, are available on special order.



Farmall Cub
Cub-172 Cotton and Corn Planter
One-Row, Forward-Mounted



Illust. 1 — Cub-172, runner-type, one-row corn and cotton planter with Richmond-type corn hopper. Attachments shown are the shoe-type marker and a Cub-144 cultivator rear section.

- Runner type.
- Row spacings from 36 to 48 inches.
- Simple and easy to operate.
- Farmall Touch-Control or manual control.
- Quick-change.
- By using different hoppers, a variety of seeds may be planted.

Runner-Type Planter

The Cub-172, one-row runner-type, is the ideal planter wherever a one-row runner planter is required. This planter drill-plants in row spacings from 36 to

48 inches apart. It will plant from 8 to 15 acres per day, depending on the row spacings. A choice of four hoppers permits the selection of the one best adapted to the planting of such seeds as cotton, hybrid corn, velvet beans, peanuts in the shell or shelled, sorghum, and large lima beans down to small tender seeds such as the tomato.

The ground working unit on the Cub-172 planter consists of a runner opener and a self-cleaning open or closed press wheel. Available as extra equipment are two blades to cover the seed furrow, a shoe-type marker which provides a guide for the next row, and a wing and dirt shield which attaches to the runner so that the planter can be used for leveling off beds at the time of planting. A fertilizer attachment is available which will, at the time of planting, deposit fertilizer to one side and deeper than the seed.



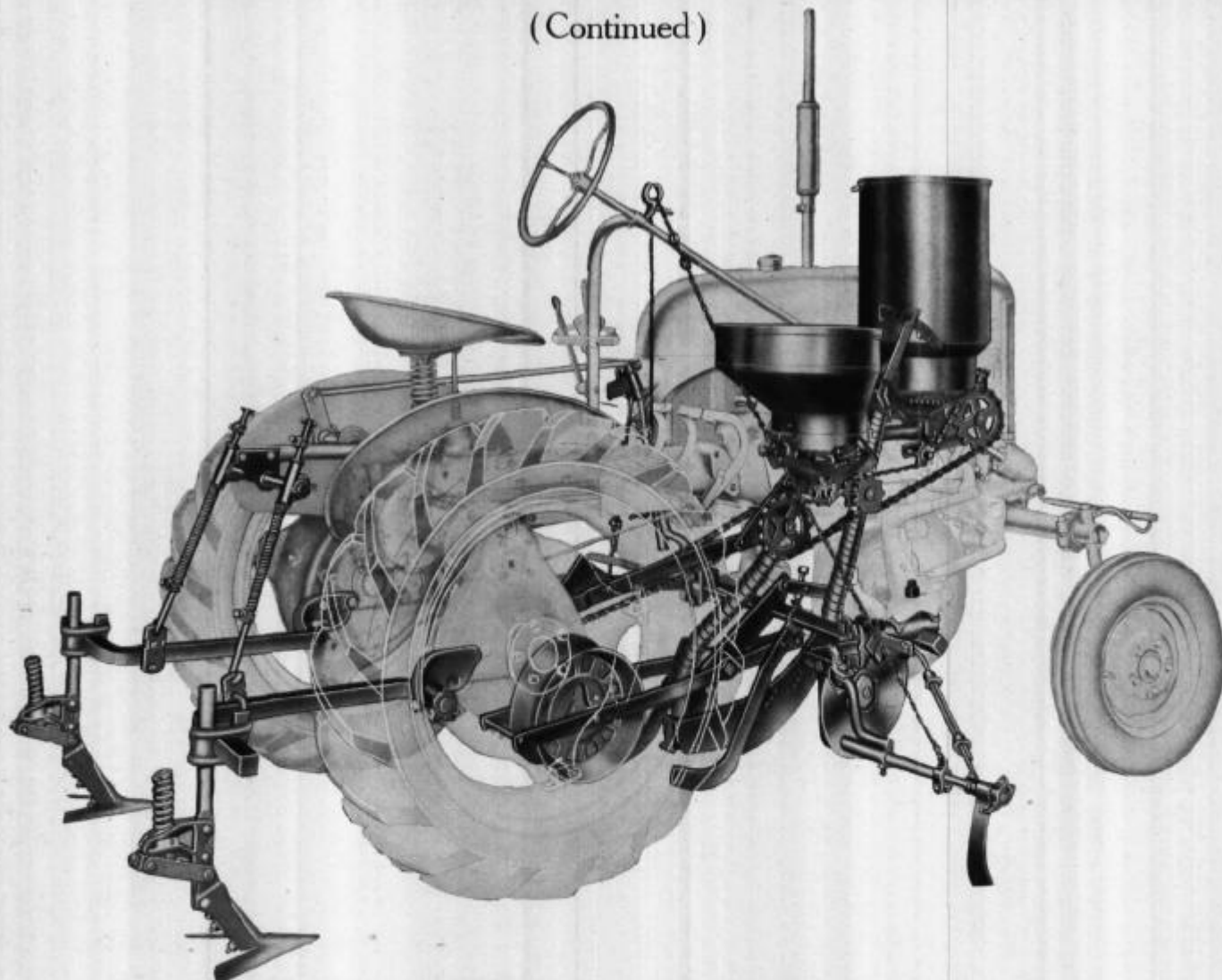
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Farmall Cub
Cub-172 Cotton and Corn Planter
(Continued)



Illust. 2 — Cub-172, one-row, runner-type corn and cotton planter with a POAX reverse feed hopper. Attachments shown are a fertilizer unit with disk opener, (deep applicator is furnished with unit) a shoe-type marker, and a Cub-144 cultivator rear section.

Regular Equipment

One of four hoppers is supplied as ordered.

Single Seed Hoppers

One No. 167 seed plate bundle for the single-seed cotton hopper for small seeds (regular for Dallas, Oklahoma City, Amarillo, San Antonio, and Houston territories). One POSP-7009 corn equipment for the single-seed cotton hopper only (regular for territories other than Dallas, Oklahoma City, Amarillo, and Houston).

One POSP-7019 cotton equipment for the single-seed cotton hopper only (regular for territories other than Dallas, Oklahoma City, Amarillo, and Houston).

One POSP-7020 cotton and corn equipment for the single-seed cotton hopper only (regular for Dallas, Oklahoma City, Amarillo, San Antonio, and Houston territories).

Type "C" Duplex Hopper

No. 500 seed plate bundle furnished as "regular."

POAX Reverse Feed Cotton Hopper

Corn equipment is available on special order.

Richmond Type Corn Hopper

Two seed plates are furnished. Orders must specify the seed plates desired. Refer to pages 191-F and G.

Special Equipment

Runner wing and dirt shield. Covering blade attachment. Cub-53-A fertilizer attachment. Marker attachment for flat land planting. Deep fertilizer applicator attachment for Cub-53-A may be ordered special or in lieu of the regular disk applicators. For information on conversion hoppers for the Cub-172, refer to page 200-A.



Farmall Cub

Cub-172 Cotton and Corn Planter

(Continued)



Specifications

Planter No.	Hoppers (as ordered)	UNIVERSAL UNITS REQUIRED		Row Spacing	Net Weight (Approx.)
		Touch-Control	Manual Control		
Cub-172	Single Seed Hoppers	No. 511 892 R91 Universal Mounting Frame	No. 511 892 R91 Universal Mounting Frame	36 to 48 in.	187 lb.
	Type C Duplex	.....	No. 511 894 R91 Front Rockshaft	.....	184 lb.
	POAX Reverse Feed	.....	No. 511 893 R92 Raising Lever and Rear Rockshaft	.....	173 lb.
	Richmond Type	.....	.....	.....	161 lb.

Effortless Control

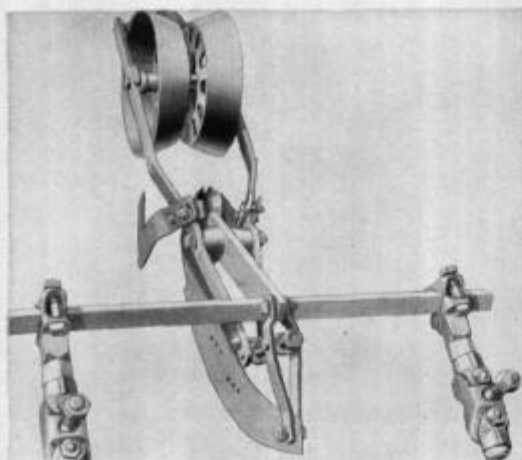
With Manual Control, the planter lifts easily, while with the Touch-Control the operator can lift or lower the planter with mere fingertip touch. The press wheel serves as a gauge wheel. It is equipped with a screw adjustment for regulating the depth of planting.

Planting in Beds

By the installation of runner wings and dirt shields (special equipment), the Cub-172 planter can be used for planting on beds.

Hoppers

Four types of hoppers are listed as regular equipment for the Cub-172 planter, and one is furnished as ordered: POAX reverse feed cotton hopper, the Type "C" Duplex hopper, the Richmond type flat-and-edge-drop



Illust. 3—The simple, compact Cub-172 planter ground unit. Notice the press wheel to firm the soil around the seed.

hopper, and single seed cotton hopper. These are described on page 199-H. Special hopper conversion attachments, as listed on page 200-A, make it possible to convert from the hopper furnished with the machine to any other type.

Ground Equipment

The ground equipment for the A-172 series runner planters consists essentially of a runner opener and press wheel. It is a compact unit which can readily be attached or detached without disturbing the original setting and adjustment of the ground tools.

Cub-53-A Fertilizer Attachment

(One-row Cub planters and Cub-144 cultivator)

The Cub-53-A fertilizer attachment deposits fertilizer at the time of planting, and can be used with the Cub-144 cultivator to side dress the crop while it grows.

The Cub-53-A for the Cub-172 planter is designed to work as an integral part of that machine. It places the fertilizer in proper relation to the seed so that the maximum benefits are obtained. The fertilizer unit consists of a large hopper, delivery spout, and fertilizer depositing tools. The hopper is carried on a support which is easily and quickly attached to the tractor side mounting pads.

An easy-to-adjust lever with a 40-notch quadrant accurately controls the quantity of fertilizer deposited. A feed wheel for average delivery is furnished as regular equipment and two extra feed wheels are available on special order (one to increase the flow and the other to decrease it). With the variety of these feed wheels, it is possible to apply from 25 to 800 lbs. of fertilizer per acre.

A Cub-144 cultivator rear section with sweeps may be used to remove the tractor tracks.





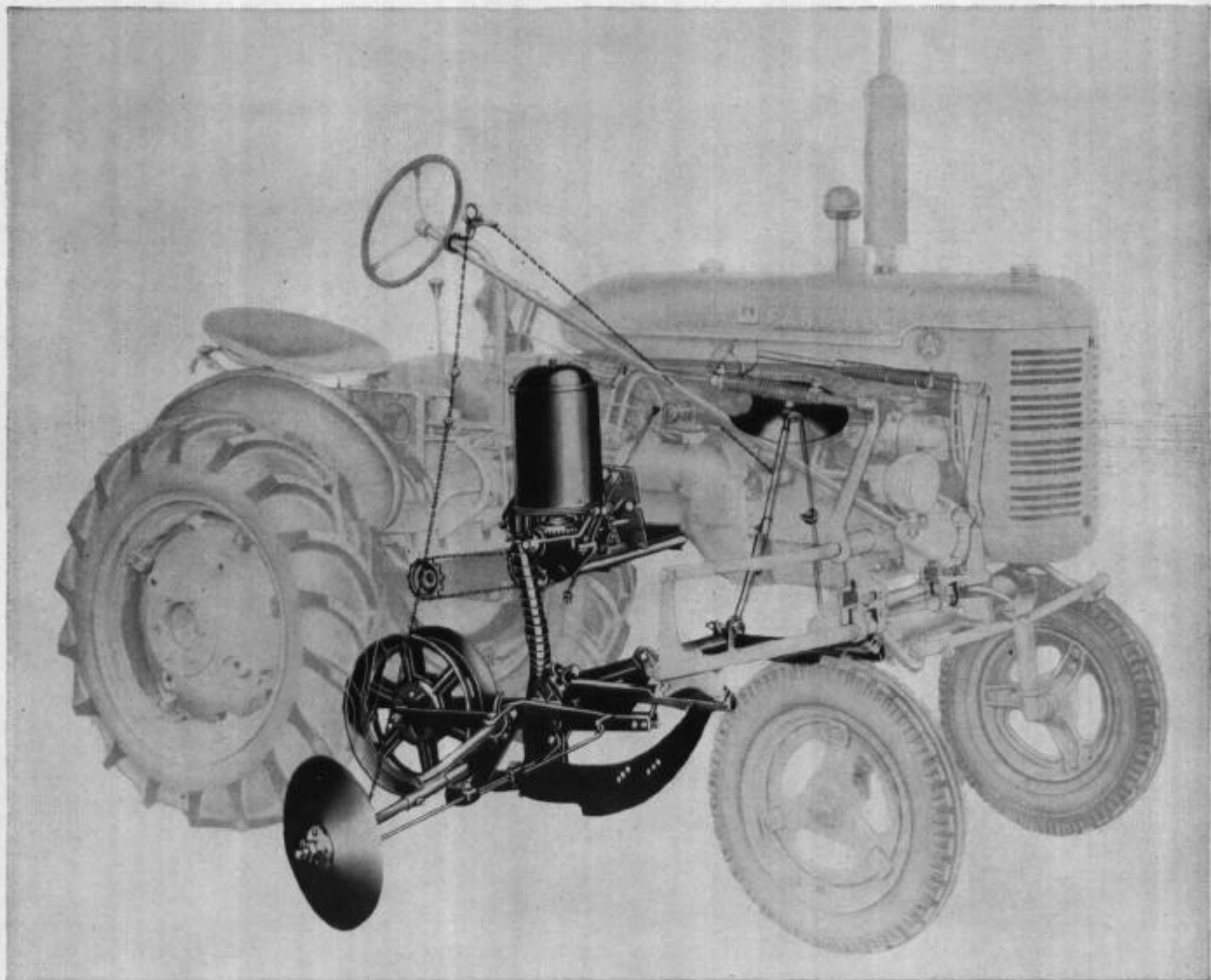
INTERNATIONAL HARVESTER

196-H

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Farmall Super-A
A-172 Series Cotton and Corn Planters
One-Row, Forward-Mounted



Illust. 1 — The A-172, shown here with the Richmond-type flat and edge-drop corn hopper, is a one-row runner-type planter. Four hoppers, regular as ordered, make it possible to plant most any type of seed ranging from hybrid corn and cotton to small, tender seeds such as tomato. The disk-type marker attachment shown here is special equipment and furnished only when ordered.

- For the general and southwestern regions.
- Runner type for planting on the flat.
- Row spacings from 32 to 42 inches.
- Simple and easy to operate.
- Farmall Touch-Control for effortless raising and lowering.
- Quick-change.

Runner-Type Planter

The A-172 cotton and corn planter, designed to work as an integral unit with the Farmall Super-A tractor, requires one 512 280 R91 Universal Mounting Frame. A seed-plate drive hub (tractor attachment No. 350 024 R91) is required and is available on special order. This planter will work in row spacings from 32 to 42 inches.



Farmall Super-A

A-172 Series Cotton and Corn Planters

One-Row, Forward-Mounted (Continued)



Specifications

Planter No.	Hopper Equipment	Universal Units Required	No. Rows	Row Spacing	Net Weight (Approx.)
A-172	Flat and Edge-Drop	Universal Mounting Frame Seed-Plate Drive hub	One	32 to 42 in.	205 lbs.
A-172	Single-Seed Cotton		One	32 to 42 in.	—
A-172	Type C Duplex		One	32 to 42 in.	—
A-172	POAX Reverse-Feed Cotton		One	32 to 42 in.	—

Regular Equipment

One No. 167 seed plate bundle for the single-seed cotton hopper for small seeds (regular for Dallas, Oklahoma City, Amarillo, San Antonio, and Houston territories).

One No. 500 seed plate bundle for the Type-C duplex hopper only.

One POSP-7009 corn equipment for the single-seed cotton hopper only (regular for territories other than Dallas, Oklahoma City, Amarillo, and Houston).

One POSP-7019 cotton equipment for the single-seed cotton hopper only (regular for territories other than Dallas, Oklahoma City, Amarillo, and Houston).

One POSP-7020 cotton and corn equipment for the single-seed cotton hopper only (regular for Dallas, Oklahoma City, Amarillo, San Antonio, and Houston territories).

Special Equipment

Runner wing and dirt shields. Covering blade attachment. A-53-A fertilizer attachment (for details on this attachment see page 197. Marker attachment, disk type. Marker attachment, shoe type.

For information on conversion hoppers for the A-172 ground unit, see page 200-A.

Regular Hoppers

Four hoppers — the Richmond-type flat and edge-drop corn hopper, the single seed cotton hopper, the Type-C duplex hopper, and the POAX reverse-feed cotton hopper — are furnished regularly, as ordered.

Conversion Hoppers

If, after the customer buys the A-172 ground unit and one of the four hoppers as listed above he wishes to purchase another hopper, he can purchase any of the hoppers as conversion units (see page 200-A for details). The purchase of these conversion hopper units permits the operator to plant most any type of seed that is grown in rows on the flat.

Ground Equipment

The ground equipment for the A-172 series runner planters consists essentially of a runner opener and press wheel. It is a compact unit which can readily be attached or detached without disturbing the original setting and adjustment of the ground tools.



Farmall Super-A

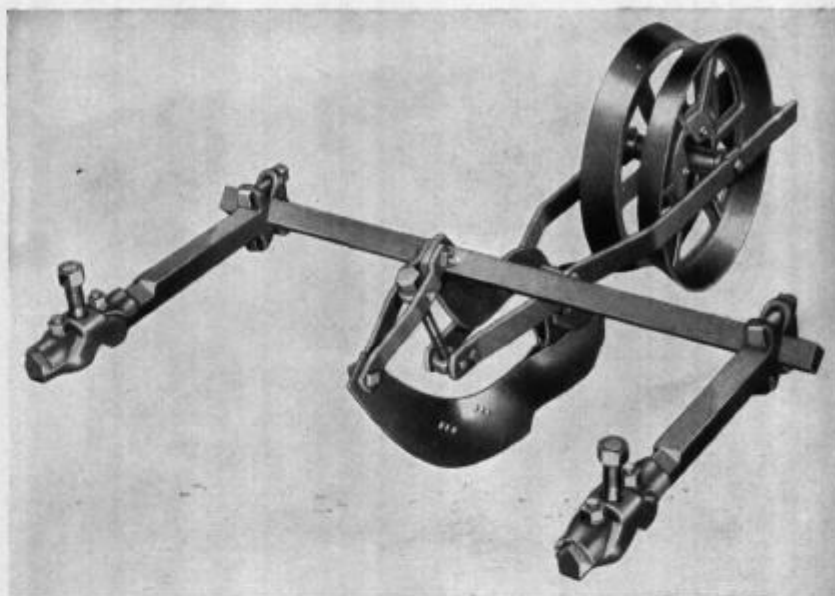
A-172 Series Cotton and Corn Planters

One-Row, Forward-Mounted (Continued)



A Planter for All Crops

The A-172 one-row, runner-type is the ideal planter for the farming practices employed in the Southwest and throughout the rest of the country where planting on the bed or in the furrow is not practiced generally. It can be used for planting on beds by installing runner wings and dirt shields to the runner which are available as special equipment. A choice of four hoppers enables the operator to plant accurately and quickly any seed, ranging from hybrid corn, cotton, velvet beans, peanuts in the shell or shelled, sorghum, and large lima beans to small, tender seed such as tomato.



Illust. 1 — Ground equipment for the A-172 planter series is a simple, compact planting unit which can be mounted or dismounted in a matter of minutes.

Countershaft Assembly

The countershaft assembly, including the hopper support and drive, is driven by the tractor seed plate drive hub and attaches to the tractor mounting pads on the tractor clutch housing.

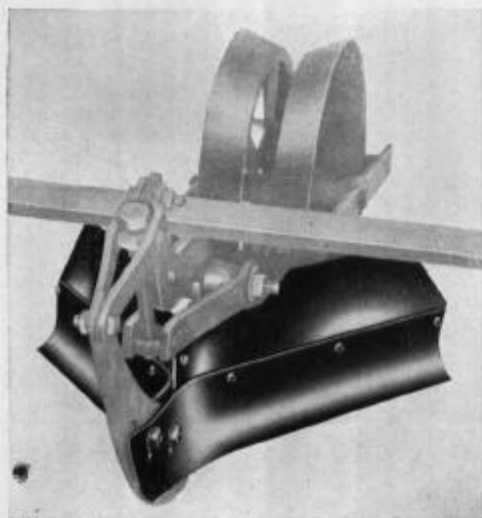
Effortless Control

With Farmall Touch-Control, the operator can lift or lower the planter with just a fingertip touch of the lever. The press wheel serves as a gauge wheel.

It is equipped with a screw adjustment for regulating the depth of planting.

Designed for Quick Change

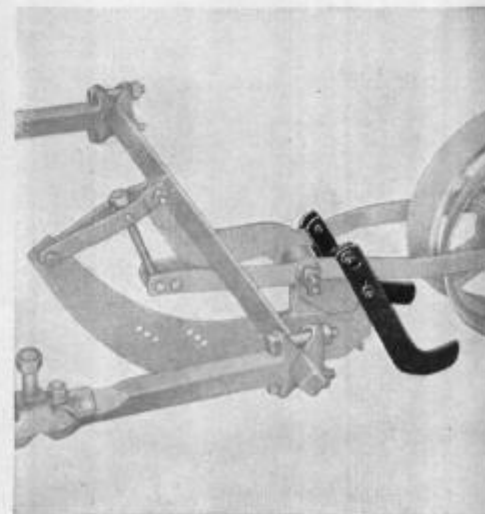
The implements are designed for quick change. It is only a matter of minutes to change from one operation to another. With these quick-change implements as many as four or five operations can be accomplished in a single day. They can be done faster, easier, better, and with more profit than ever before.



Illust. 2 — The runner wing and the dirt shield are used to slice off the top of the bed or ridge. The seed is deposited in moist, weed-free soil. It gets off to a rapid start.



Illust. 3 — The covering blade attachment does an excellent job in loose soil and where it is desirable to get a good covering over the seed. The press wheel then comes along behind and firms the soil which assures germination of the seed.



Farmall Super-A

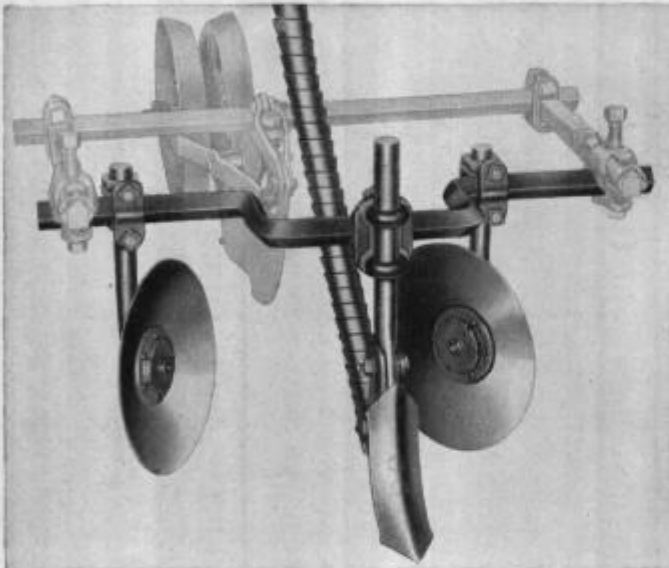
A-172 Series Cotton and Corn Planters

One-Row, Forward-Mounted (Continued)

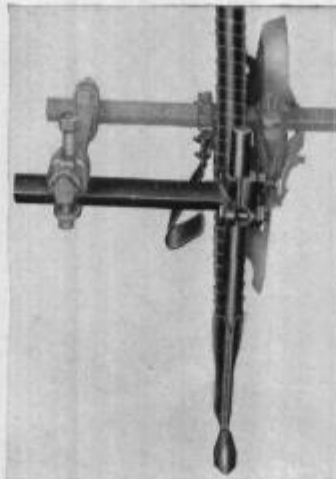


Track Sweep Attachment

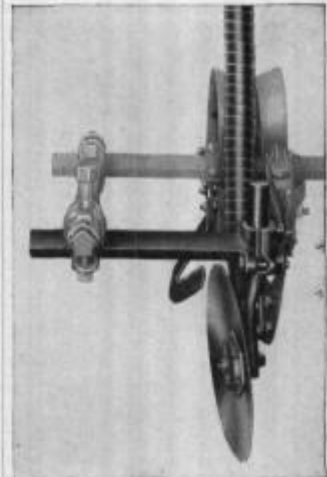
A rear track sweep attachment (furnished only when ordered) consists of two $1\frac{3}{8}$ -inch square adjustable gang beams. Each gang beam carries a spring trip and a sweep and is identical to the No. 28 tool equipment rear section for the A-144 cultivator. This rear section, used for removal of wheel tracks, requires the Universal (rigid) Rockshaft for raising or lowering. The Universal (split) Rockshaft, designed for use with the A-189 two-way plow, will work equally well in place of the rigid rockshaft.



Illust. 1 — The fertilizer shovel opener and bedder attachment does an excellent job of depositing fertilizer below the seed and throwing up a bed. The shovel opener may be used alone to open up a seed furrow.



Illust. 2 — The deep applicator fertilizer attachment offers a wide range of adjustments, both vertically and horizontally. Regardless of the planting practices, this applicator can be adjusted to place the fertilizer exactly where the operator wants it.

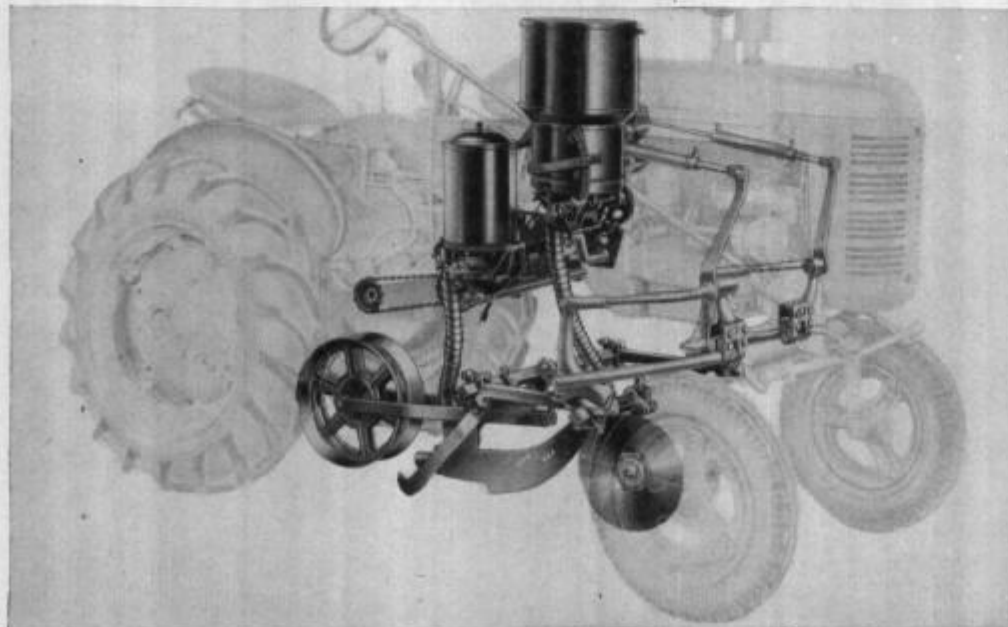


Illust. 3 — The fertilizer disk-type opener is furnished with the fertilizer attachment and offers the same wide range of adjustments, vertically and horizontally, as the deep fertilizer applicator attachment.

The disk-type opener is recommended for use where the soil is extremely loose or the surface is covered with considerable trash.

A-53-A Fertilizer Attachment

Depositing fertilizer at the time of planting assures maximum crop yields at the time of harvest. The fertilizer attachment for the A-172 series planters is designed to work as an integral part of the machine. It places the fertilizer in proper relation to the seed so that maximum benefits are obtained.



Illust. 4 — The A-53-A fertilizer attachment with disk-type opener mounted on the Farmall Super-A tractor in conjunction with the A-172 planter with the Richmond-type flat and edge-drop hopper. A 40-notch quadrant and three sizes of feed wheels make it possible to deposit the fertilizer at rates from 25 to 800 pounds to the acre.



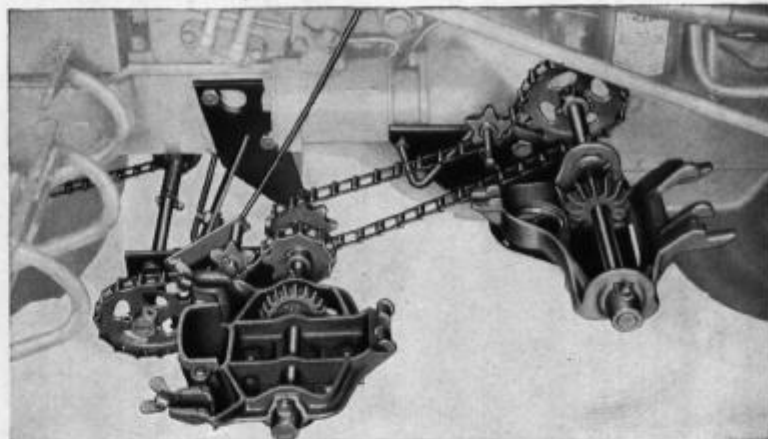
Farmall Super-A Tractor

Fertilizer Attachments

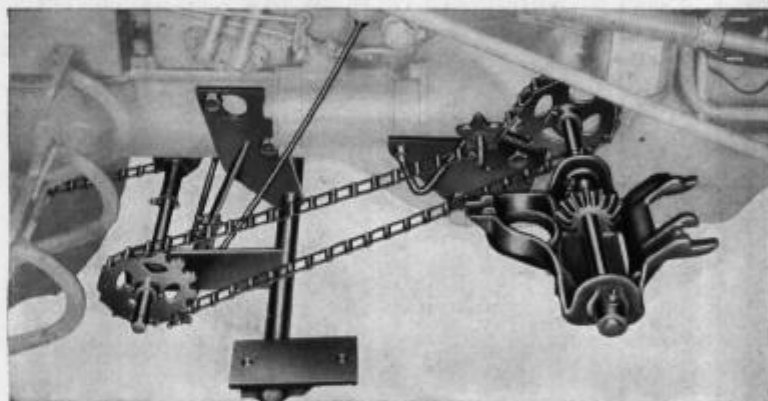


For A and AV-170, A-270, A-271, A-172 Planters and A-144 Cultivators

- One hopper and bracket for all fertilizing operations.
- Large capacity hopper—65 pounds.
- Single star-feed delivers fertilizer in a constant, even stream.
- Three feed-wheels (one regular, two special) make it possible to apply fertilizer from 25 to 800 pounds per acre.
- Lever with 40-notch quadrant for accurate control of amount of fertilizer deposited.
- Positive clutch mechanism operates off the right hand power arm of Farmall Touch-Control.
- Fertilizer hopper and bracket mounted quickly and easily.
- Simple and easy to change from "fertilizing while planting" to "side dressing while cultivating."



Illust. 1— The fertilizer bracket and drive chain is shown here in conjunction with the single seed cotton hopper bracket. This same fertilizer bracket works on any of the planters or the A-144 cultivator. The difference is in the length of tube and the type of applicator. A special adapter bracket is available for the AV-170.



Illust. 2— The fertilizer bracket and drive chain is shown here hooked up for side dressing with the A-144 cultivator. The only change is that the planting hopper bracket has been removed and the chain is linked to drive directly from the drive shaft.

One Hopper and Bracket

The fertilizer attachments for the above named planters and cultivators which mount on the Farmall Super-A and AV tractors have been simplified and reduced to the absolute essentials. The hopper and the bracket are common to all the implements. The only difference is in the length of tube and type of applicator.

Large Capacity Hopper

The fertilizer hopper is large enough to hold sufficient fertilizer to cover plenty of ground—65 pounds, based on the displacement of average commercial fertilizer.

Single Star-Feed

The single star-feed type of mechanism assures that the fertilizer is delivered in a constant, even stream.

It will deliver most any type of commercial fertilizer without clogging. Another important feature is that no tools are required for removing the star-feed for cleaning.

Specifications

Planter Number	Fertilizer Attachment	Applicator Regular	Weight (Approx.) Lbs.
A-170	A-54-A	Disk opener and coverer	80
AV-170	AV-54-A	Disk opener and coverer	86
A-270	A-54-B	Disk opener and coverer	145
A-171	A-53-B	Planter sweep clamp	51
A-172	A-53-A	Opener disk and blade coverer	79
Cultivator Number			
A-144	A-53-C	Cultivator standard tube fastener	88



INTERNATIONAL HARVESTER



Farmall Super-A Tractor Fertilizer Attachments

For A and AV-170, A-270, A-171, A-172 Planters and
A-144 Cultivator (Continued)



Three Feed-Wheels

Different localities and different types of soil require varying amounts of fertilizer to assure an abundant crop. To meet these varying demands, three feed-wheels are available for the fertilizer hopper. The feed-wheel furnished regularly will deliver a medium amount of fertilizer. The two feed-wheels which are furnished as special equipment are designed to deliver a lesser quantity and a greater quantity. Any quantity, ranging from 25 to 800 pounds of fertilizer, can be deposited in a steady, smooth stream.

Lever with 40-Notch Quadrant

To enable the operator to deposit the exact amount of fertilizer required, based on the type of soil and the type of crop, small adjustments in the amount of fertilizer deposited can be made with a lever which is conveniently located on the side of the hopper. A 40-notch quadrant enables the operator to regulate the flow from minimum to maximum with any of the feed-wheels which are available for this attachment. With the three feed-wheels the operator has 120 flow-rates which are increased or decreased at the rate of approximately $6\frac{1}{2}$ pounds per notch on the quadrant.

Positive Clutch Mechanism

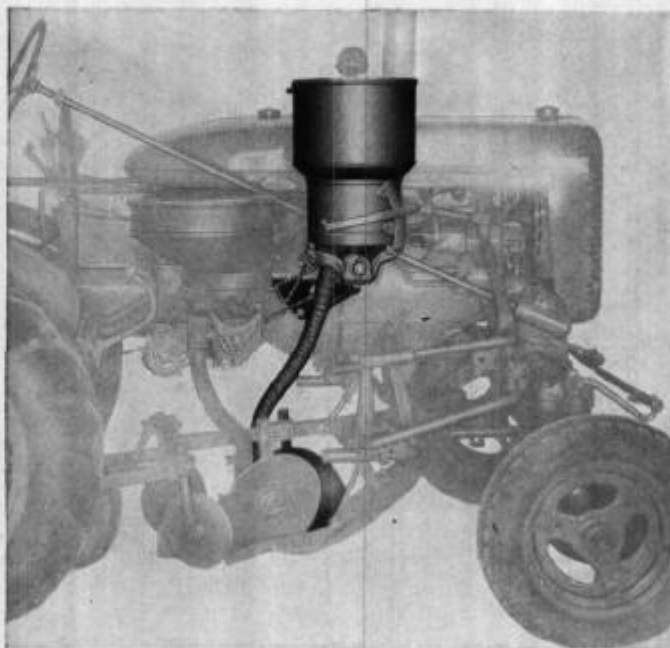
The clutch mechanism, which operates off the drive shaft just ahead of the tractor rear housing, is engaged or disengaged through a linkage attached to the right hand Farmall Touch-Control power arm which also raises or lowers the fertilizer applicator in conjunction with the planter or cultivator.

Quickly and Easily Mounted

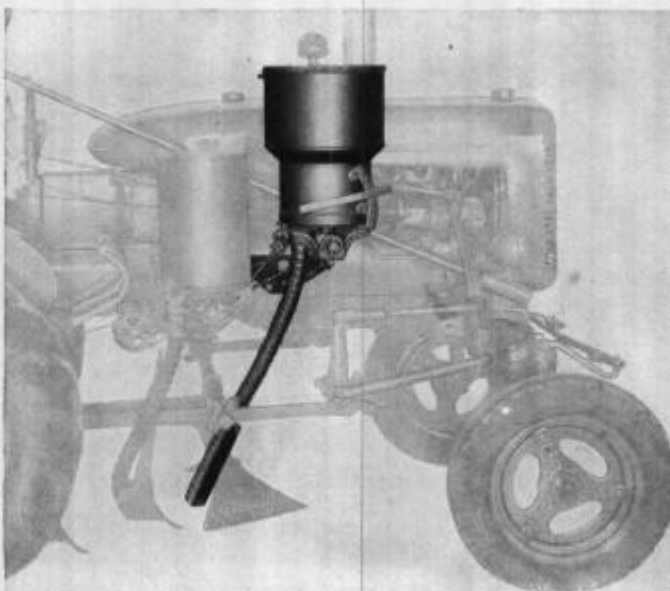
A few minutes is all that is necessary to mount the fertilizer bracket to the Tractor Mounting Pad. It is just a matter of slipping the fertilizer bracket over the taper-headed bolts and tightening them up. It takes only a minute to hook up the chain drive and clamp the hopper to the bracket. One hopper for both planter and cultivator means that once the fertilizer hopper is in place it need not be removed throughout the planting and cultivating season.

Quick-Change

Changing from "fertilizing while planting" to "side dressing while cultivating" is a simple operation. All that is necessary is to remove the planter bracket, lengthen the chain, and attach the fertilizer tube to the front cultivator sweep or deep applicator attachment.



Illust. 1 — The A-54-A fertilizer attachment works with the A-170 planter. Regular applicator equipment consists of an opener disk, a boot, and No. 25 disk covering attachment. This applicator deposits fertilizer to one side of the seed. A depth adjustment on the applicator makes it possible to apply the fertilizer above, even with, or deeper than the seed. The AV-54-A fertilizer attachment for the AV-170 planter is the same unit except for a longer tube and different size sprocket to account for the larger wheels on the Farmall Super-AV tractor. The A-54-B fertilizer attachment for the A-270 planter is the A-54-A with the addition of a left-hand assembly.

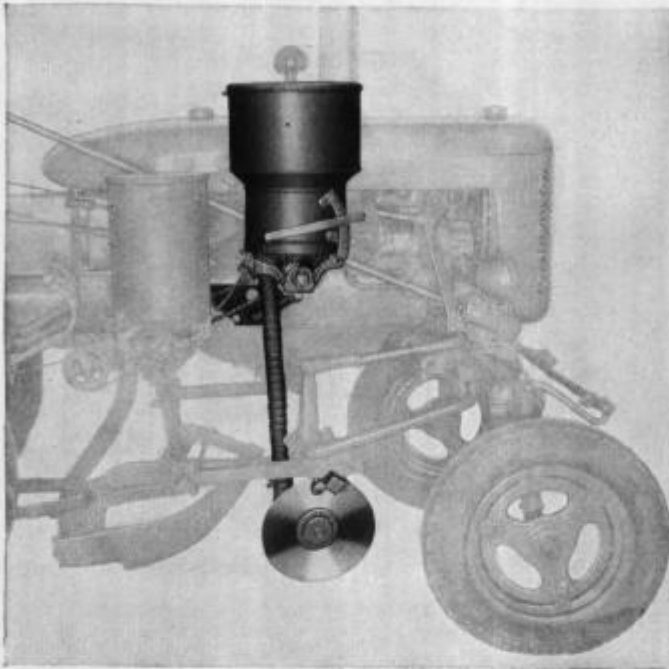


Illust. 2 — The A-53-B fertilizer attachment is for the A-171 Blackland planter. The regular applicator consists of a simple lower spout guard which holds the tube so that the fertilizer is deposited to one side of the seed furrow. The fertilizer is covered by shovel covers or any of the other covering attachments listed for this planter.

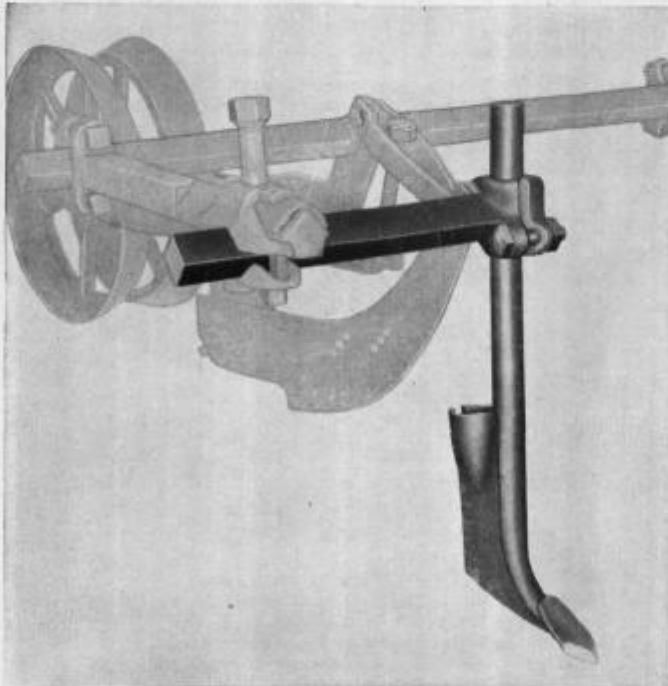


Farmall Super-A Tractor Fertilizer Attachments

For A and AV-170, A-270, A-171, A-172 Planters and
A-144 Cultivator (Continued)



Illust. 1 — The A-53-A fertilizer attachment works with the A-172 planter. Regular applicator consists of an opener disk and boot and a covering blade. Lateral and horizontal adjustments permit the operator to deposit the fertilizer in most any relationship to the seed furrow.

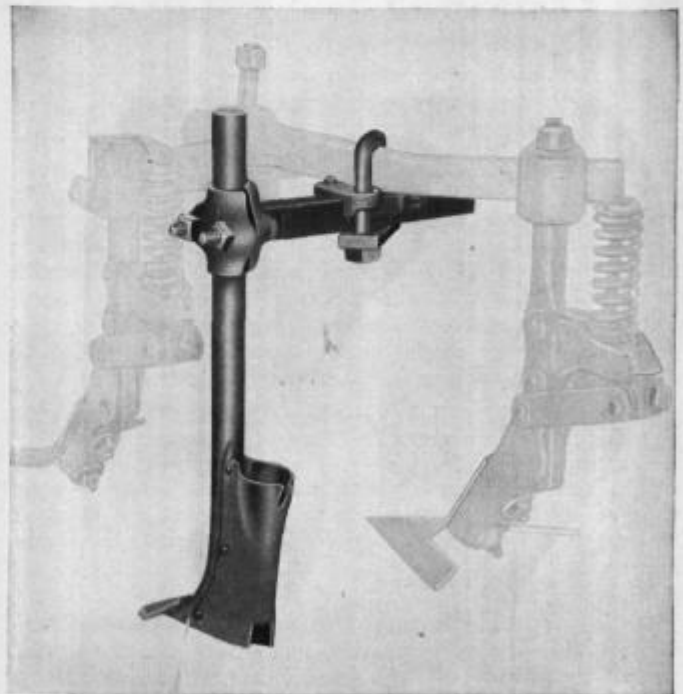


Illust. 3 — The deep applicator fertilizer attachment is shown here with the A-172 cotton and corn planter. If an applicator has already been purchased for the A-144 cultivator, it can be used in place of the disk opener standard.

Deep Applicator Fertilizer Attachment

This attachment was designed primarily for side dressing while cultivating. The outstanding feature of this deep applicator is that it can be set to lay down a band of fertilizer in most any relationship to the row. Lateral adjustment is accomplished with the horizontal bar. Vertical adjustment is accomplished with the deep applicator standard. The attachment consists mainly of the 1½-inch round standard to which is attached a diamond point shovel. The standard, boot and shovel are welded to form a simple, streamlined, sturdily constructed fertilizer applicator that will place the fertilizer right where the operator wants it. With this applicator the operator can lay a band of fertilizer right down close to the roots of the crop where it will do the most good. The shallow-rooted weeds are not able to absorb the fertilizer before the crop has a chance to utilize it.

If the operator wants to use this applicator for the application of fertilizer in conjunction with the A-172 cotton and corn planter he can easily install it in place of the disk opener.



Illust. 2 — The deep applicator fertilizer attachment is for use with the A-144 cultivator for side dressing. Lateral and horizontal adjustments permit the fertilizer to be placed in a band at various depths, depending on the time of application and the crop to be fertilized. Deep application of fertilizer at the time of cultivating makes it available to the plant roots at the proper time and gets it away from the surface weeds.



Farmall C Cotton and Corn Planters



These are forward-mounted, two-row, drill-type planters designed to meet the planting practices of growers in the southern sections of the country. They will plant virtually any of the row crops commonly grown in the South, accomplishing in one trip down the field various operations which formerly required several trips and different machines. The grower therefore requires only one planter to handle all his diversified crops. Another feature, especially true of the combination-type and Blackland planters, is that they will work all the ground at the time of planting. This prevents the weeds from getting started ahead of the planted crop. The C-244 cultivator rear section may be used with any of these planters for working the tractor wheel tracks.

Three Types: The Farmall C cotton and corn planters fall into three general groupings—the C-270 combination planter which is adapted to planting practices and crops grown in the Southeast; the C-271 sweep-type planter for the Blackland regions of Texas and Oklahoma; and the C-272 runner-type planter popular in the Southwest and other regions where a simple runner type drill-planter is required.

Hoppers: Four types of hoppers for handling various kinds of seeds in accordance with local custom and preferences are available. They are:

- Single-seed cotton hopper.
- POAX reverse-feed cotton hopper.
- Type "C" Duplex hopper for all seeds except cotton.
- Richmond-type corn hopper.

These hoppers are essentially interchangeable and are furnished with the different planters as listed.

Hopper Drives: The hopper mechanisms are chain driven from sprocket and clutch units (one on each side of the tractor) which attach to stub shafts projecting from the tractor brake housings. The clutch units automatically disengage and engage the drives as the ground units are raised and lowered. The stub shafts are a tractor attachment and must be ordered special.

Fertilizer Attachments: Any of these planters may be equipped with fertilizer attachments for depositing commercial fertilizers in the most approved manner at time of planting. These same attachments can be used to side-dress the crop when cultivating with the C-244 cultivator.

Simple, Quick-Change Units: These planters are simple, sturdily built units designed for quick-change. They consist only of the essential parts necessary to do the job efficiently. The planter ground units are attached to the Universal Mounting Frame on the tractor by two bolts with tapered-face nuts which slip into key-hole shaped slots in the mounting frame gang heads. The hoppers and hopper drive assemblies are attached to the rear-mounting pads on the tractor clutch housing by means of slip-on brackets rigidly held in place by cap screws with tapered-face heads.

Operations Performed in One Trip Down the Field

C-270 Planter

Bed Planting

(Seed planted on beds formed by the planter)

1. Disk hillers throw up a bed.
2. Gauge shoe levels and firms the top of bed, and accurately controls planting depth.
3. Disk (or runner) opener makes a furrow in which the seed is deposited.
4. Disk coverer covers the seed.
5. Press wheel firms the soil around the seed.
6. Disk marker attachment makes a guide mark to follow when planting the next rows.
7. Cultivator rear section can be used to work the wheel tracks.

When fertilizer attachment is used:

8. Fertilizer disk opener makes a furrow in which the fertilizer is deposited slightly to one side of the seed.
9. Fertilizer disk coverer covers the fertilizer.

Water Furrow Planting

(Seed planted in furrows made by the planter)

1. Shovel attachment and/or disks (when used) open a water furrow.
2. Disk (or runner) opener makes a furrow in which the seed is deposited.
3. Disk coverer covers the seed.
4. Press wheel firms the soil around the seed and gauges planting depth.
5. Disk marker attachment makes a guide mark to follow.
6. Cultivator rear section can be used to work the wheel tracks.

When fertilizer attachment is used:

7. Fertilizer disk opener makes a furrow in which the fertilizer is deposited slightly to one side of the seed.
8. Fertilizer disk coverer covers the fertilizer.

C-271 Planter

Blackland Planting

(Seed planted on beds previously made by middlebuster)

1. Special cultivator-type shovels attachment (when used) work the sides of the bed ahead of the sweep.
2. Wide planter sweep slices off the bed crown so that seed is planted in moist soil and the weeds are killed.
3. Shovel opener behind the sweep makes a furrow in which the seed is deposited.
4. Shovels (or disks) coverers cover the seed.
5. Press wheel attachment (when used) firms the soil around the seed.
6. Cultivator rear section can be used to work the tractor wheel tracks.

When fertilizer attachment is used:

7. The fertilizer is deposited behind the planter sweep and slightly to one side of the seed.

C-272 Planter

"Flat" Planting

(Seed planted on previously prepared "flat" ground or on top of beds)

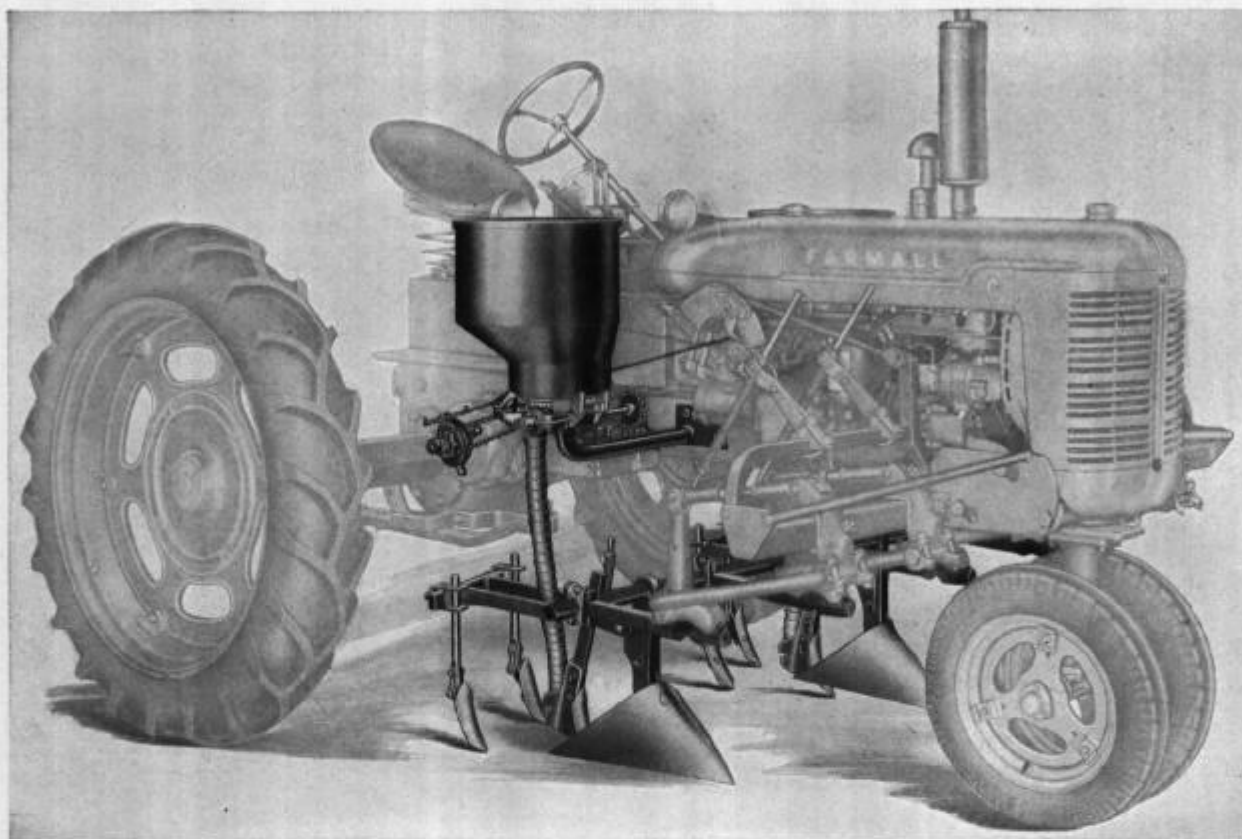
1. The runner opener opens a furrow in which the seed is deposited.
2. Blade coverers (when used) cover the seed.
3. Press wheel closes furrow and firms the soil around the seed; also gauges the planting depth.
4. Disk marker attachment makes a guide mark.
5. Cultivator rear section can be used to work the wheel tracks.

When fertilizer attachment is used:

6. The fertilizer disk opener, placed ahead of the runner, makes a furrow in which the fertilizer is deposited slightly to one side of the seed.
7. Fertilizer blade coverer covers the fertilizer.



Farmall C C-271 Two-Row Blackland Planter



Illust. 1 — The C-271 Blackland planter with regular equipment and 18-inch plain sweep.

The C-271 is a two-row sweep-type planter designed for planting cotton, corn, peanuts and other row-crops commonly grown in the Blackland regions of the South. It will plant rows spaced from 36 to 42 inches apart, planting on the top of previously made beds. The C-271 can be furnished with either single-seed cotton hoppers or with Richmond-type corn hoppers, as specified. Regular ground equipment consists of two sweep standards, two shovel openers and four covering shovels. A variety of sweeps can be furnished (see Special Equipment) for sweeping off the tops of the beds so that the seed is planted in moist ground and the weeds are killed. The ground equipment is contained in two compact units which are quick-change attached to the Universal Mounting Frame on the tractor. The hopper assemblies are attached to mounting pads on the tractor by means of slip-on brackets and tapered-face capscrews. Like all Farmall C cotton and corn planters the C-271 is operated by Touch-Control, making it easy to raise, lower and adjust the working depth of the ground units without muscular effort. The hopper drive is automatically engaged and disengaged with the lowering and raising of the ground unit so that no time or seed are wasted.

Regular Equipment

Standards for sweeps. Shovel openers. Covering shovels (friction-trip). Choice of single-seed cotton hoppers or Richmond-type corn hoppers, as specified.

For planter equipped with single-seed hoppers:

Cotton and corn equipment.

No. 167 seed plate bundle (for small seeds).

For planter equipped with Richmond-type hoppers:

Two sets of seed plates, as selected.

Special Equipment

Hopper conversion attachments as listed under *Hoppers*, page 200-A. Special seed plates — (see pages 200-B and 201). No. 23 corn and pea attachment. Nos. 7 and 8 peanut attachments. Sweeps (plain) in 14, 16, 18, 20, 22, 24 and 26-inch sizes. Sweeps (with wings) in 16, 18, 20 and 22-inch sizes. No. 14 spring-trip shovel covering attachment. No. 19 disk covering attachment. Press wheel attachment. Cultivator standard attachment (spring-trip). Fertilizer attachment.

Specifications

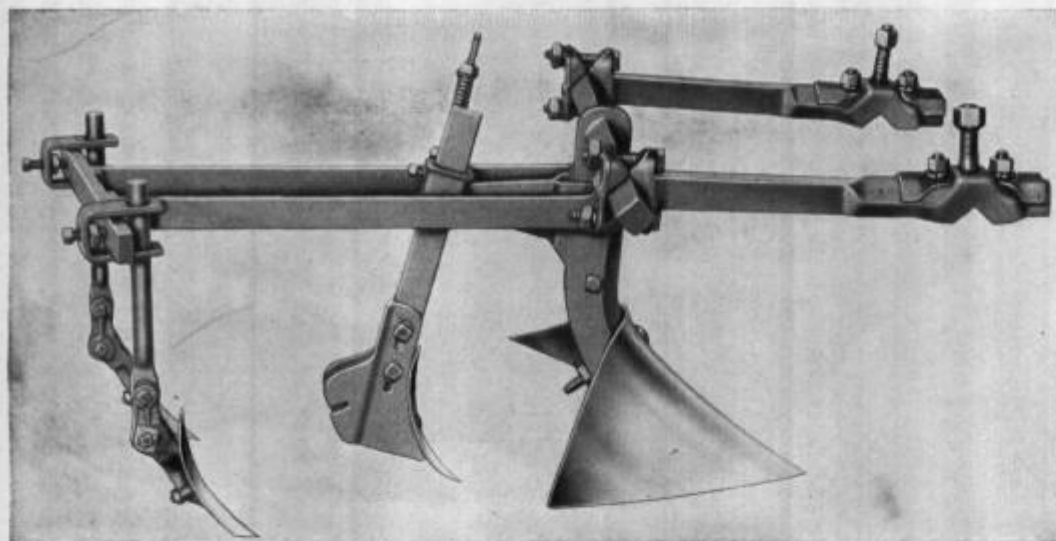
Description	Row Spacing	Universal Unit Required	Net Weight (Approx.)
C-271 planter with single-seed cotton hoppers.....	36 to 42-in.	Front Mounting Frame	393 lb.
C-271 planter with Richmond type corn hoppers	36 to 42-in.		356 lb.



Farmall C

C-271 Two-Row Blackland Planter

(Continued)

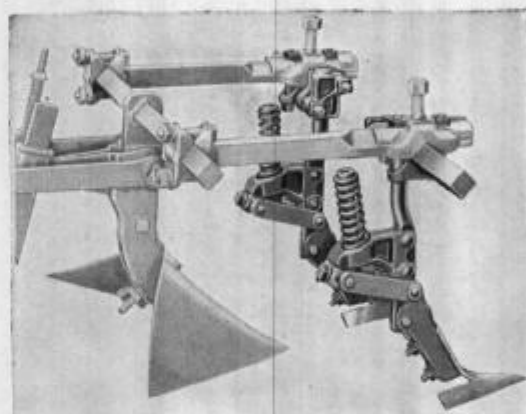


Illust. 1 — Ground unit with regular equipment and 18-inch plain sweep. Sweeps are available in various sizes, as ordered.

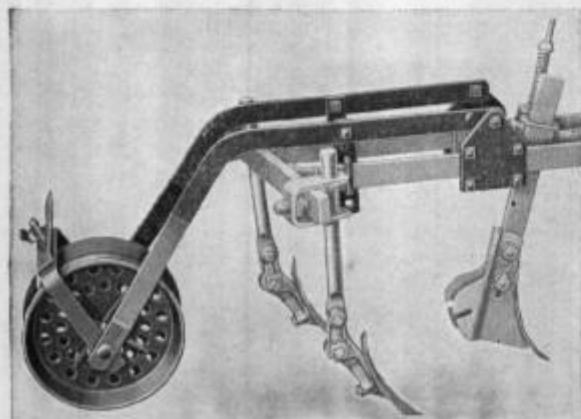
Ground Equipment

Above is shown one of the ground units as regularly supplied with the planter, except for the sweep which must be ordered in the size desired. The sweep slices off the crown of the bed killing the weeds and allowing the seed to be planted in moist soil. The shovel opener makes a furrow in which the seed is deposited, and the two friction-trip covering shovels cover the seed. Plain sweeps can be furnished in 14, 16, 18, 20, 22, 24 or 26-inch widths, as ordered, and wing sweeps in 16, 18, 20 or 22-inch sizes.

Special ground equipment, available on order, includes spring-trip standards with shovels for working the ground along the sides of the bed; a press wheel attachment for firming the soil around the planted seed, disk coverers and coverers with spring-trip standards to replace the friction-trip covering shovel standards regularly furnished.



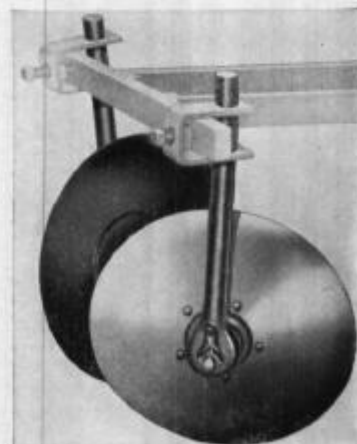
Illust. 2 — Cultivator Standard Attachment (spring-trip) used for working the ground on the sides of the bed.



Illust. 3 — Press Wheel Attachment for firming soil around seed and for gauging planting depth.



Illust. 4 — No. 14 Spring-Trip Standard Shovel Covering Attachment.

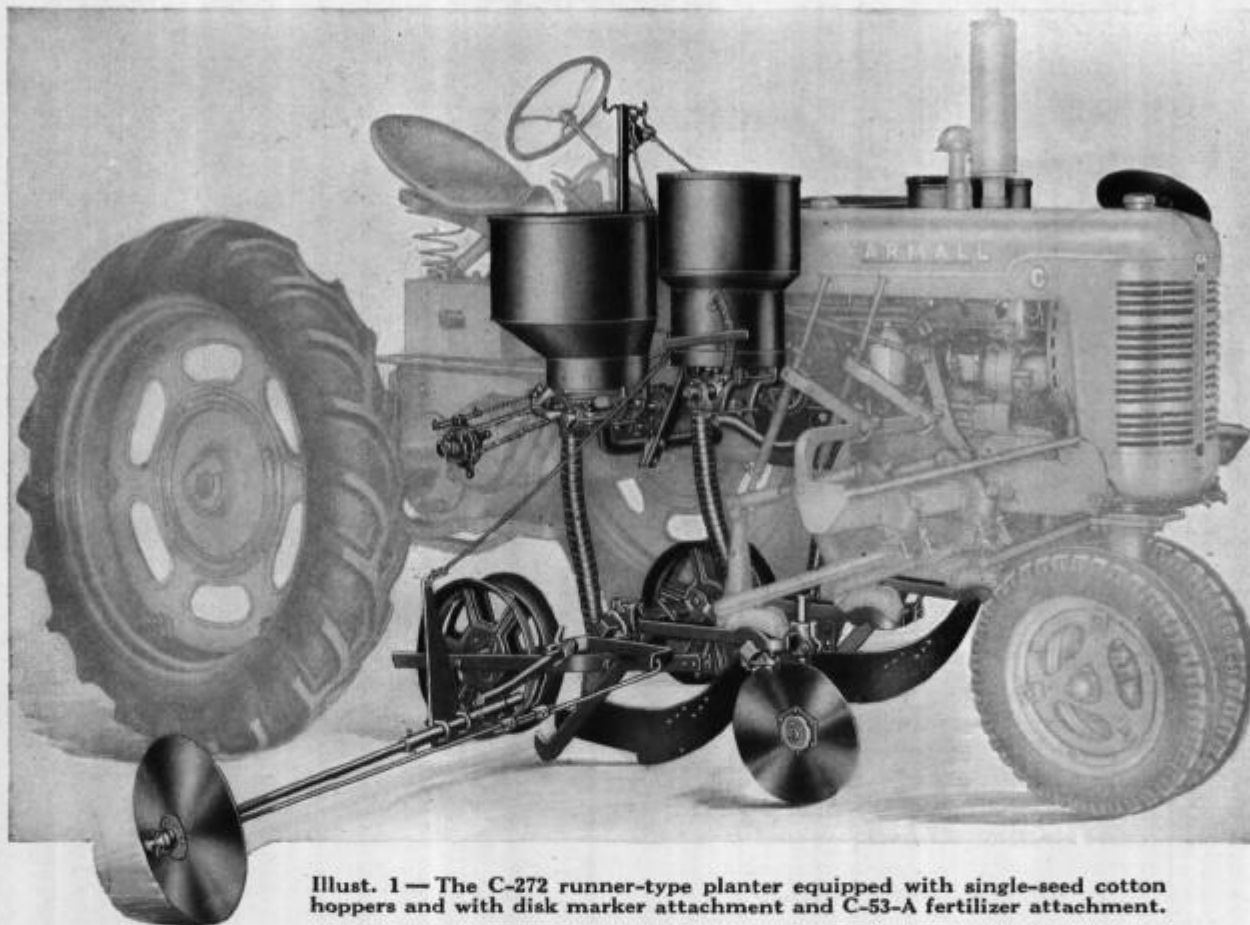


Illust. 5 — No. 19 Disk Covering Attachment.

Special covering attachments shown above replace the regular friction-trip shovel coverers.



Farmall C C-272 Two-Row Runner Planter



Illust. 1 — The C-272 runner-type planter equipped with single-seed cotton hoppers and with disk marker attachment and C-53-A fertilizer attachment.

The C-272 runner-type planter is designed for planting cotton, corn and other row-crops on previously prepared ground, either on the flat or on beds. It will plant rows spaced from 32 to 42 inches apart. The planter is furnished with any one of the following types of hoppers, as specified:

- Single-seed cotton hopper.
- POAX reverse-feed cotton hopper.
- Type-C duplex hopper.
- Richmond-type corn hopper.

These hoppers, available also as conversion attachments, permit the farmer who grows a diversity of row-crops to plant virtually any kind or size of seed with the same planter by merely interchanging hoppers. For further information on Hoppers, see pages 199H to 200A.

The planter ground equipment consists of two runners and two press wheels.

Regular Equipment

Runner openers. Press wheels. Choice of single-seed, POAX reverse-feed, Type-C Duplex or Richmond-type hoppers, as specified.

For planter equipped with Type-C Duplex hoppers:

Two No. 167 seed plate bundles (for small seeds). (Regular for Dallas, Oklahoma City, Amarillo, San Antonio and Houston territories.)

Two No. 500 seed plate bundles.

For planter equipped with single-seed cotton hopper:

Two POSP-7009 corn equipment. (Regular for territories other than Dallas, Oklahoma City, Amarillo and Houston.)

Two POSP-7019 thick cotton equipment. (Regular for territories other than Dallas, Oklahoma City, Amarillo and Houston.)

Two POSP-7020 cotton and corn equipment. (Regular for Dallas, Oklahoma City, Amarillo, San Antonio and Houston territories.)

Special Equipment

Special seed plates — see pages 200B, 201. Hopper conversion attachments as listed on page 200A. Runner wing and dirt shield attachment. Covering blade attachment. Fertilizer attachment. Disk or shoe-type marker attachments.

Specifications

Planter	Equipped with Hoppers	Row Spacing	Universal Unit Required	Net Weight (Approx.)
C-272	Richmond-type	32 to 42 in.	Front Mounting Frame	353 lb.
C-272	Single-seed	32 to 42 in.		390 lb.
C-272	Type "C" Duplex	32 to 42 in.		400 lb.
C-272	POAX Reverse-feed	32 to 42 in.		376 lb.



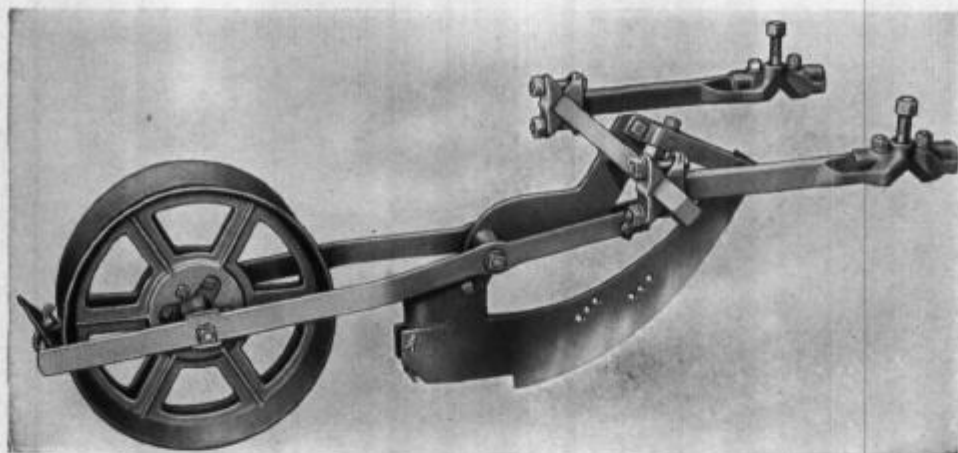
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199-D

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Farmall C
C-272 Two-Row Runner Planter
(Continued)



Illust. 1—Ground unit as furnished regularly with the C-272 planter. The press wheel serves also as a gauge wheel. It can be adjusted to obtain either an open or closed center and is adjusted for planting depth by a screw.

Ground Equipment

The regular ground equipment for the C-272 planter consists of two runner openers and two press wheels contained in two compact units—one for each row. The units are quick-change attached to the gangheads of the Universal Mounting Frame and are held securely by bolts with tapered-face nuts. Each row unit may be controlled independently of the other or both units can be raised or lowered simultaneously by Touch-Control.

The runner opener terminates in a boot through which the seed is deposited in the furrow made by the opener. The press wheel closes the furrow and firms the soil around the seed. For most conditions the regular press wheel is sufficient for this purpose. Where additional covering is desired, as for example in extra-firm soil, a special Blade Covering Attachment can be used.

Available also as special equipment is a Runner Wing and Dirt Shield Attachment, used when planting on tops of beds. It levels off the bed crown, breaking the soil crust and pushing aside the clods, so that the seed will be planted evenly in moist soil. This also kills any weed growth on top of the bed.

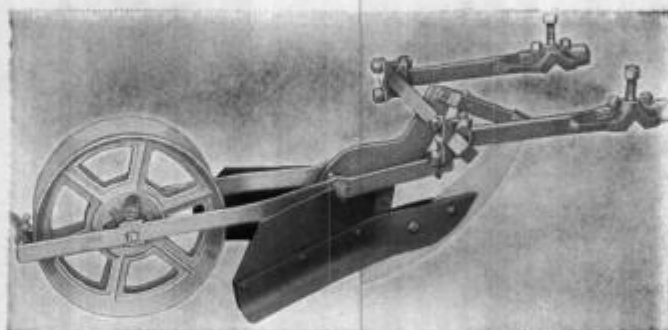
Fertilizer Attachment

Like all Farmall cotton and corn planters, the C-272 planter can be equipped with a Fertilizer Attachment. This attachment handles any of the commercial types of fertilizers, delivering them in a uniform stream, accurately controllable.

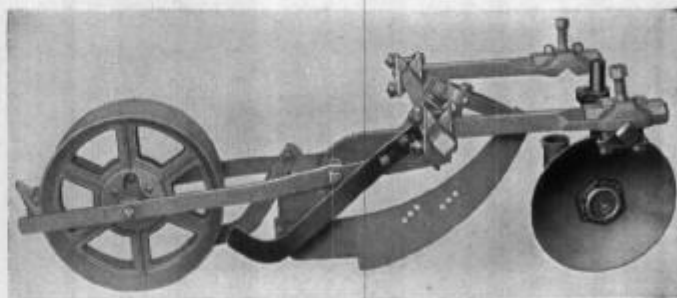
For description of Fertilizer Attachments turn to page 199-F.

Marker Attachments

Marker attachments help the operator to plant straight rows. Two types of marker attachments are available . . . the disk-type shown in connection with



Illust. 2—Runner Wing and Dirt Shield Attachment . . . used when planting on top of beds.



Illust. 3—Ground unit shown with fertilizer disk applicator and fertilizer covering blade, included with the Fertilizer Attachment, and Covering Blade Attachment used for covering seed in firm ground.

the planter on the preceding page and a shoe-type marker (not illustrated). Either type is readily attached to the planter ground unit frames. The right and left hand markers are controlled by ropes extending close to the operator . . . one marker being raised and held upright while the other is dropped in working position.



Farmall C

Fertilizer Attachments

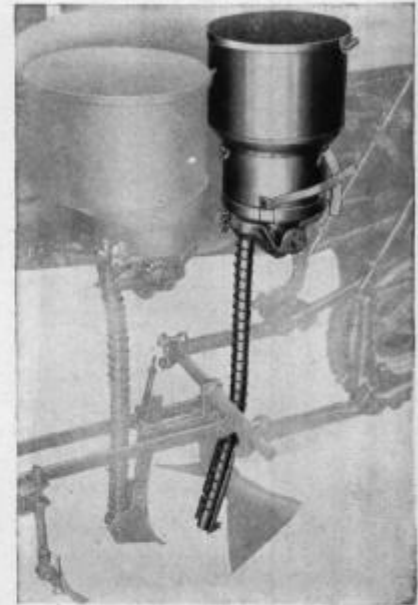
For Cotton and Corn Planters



Illust. 1 — The C-53A Fertilizer Attachment for the C-272 planter is regularly furnished with disk applicators and covering blades.



Illust. 2 — The C-54A Fertilizer Attachment for the C-270 planter is equipped with disk applicators and disk covers.



Illust. 3 — The C-53B Fertilizer Attachment for the C-271 planter deposits the fertilizer directly behind the planter sweep.

Fertilize When Planting and Cultivating

Planter fertilizer attachments, as listed in the specifications make it possible to plant and fertilizer simultaneously, thus saving time, labor and expense. These same attachments can be used to side dress the crop when cultivating.

Hoppers and Drive Same for All Planters

The fertilizer attachments are the same for the three planters, except for the applicator which deposits the fertilizer in the ground. The attachments consist of two hoppers, hopper support and hopper drive shaft. The drive shaft is chain driven from the planter hopper drive shaft and includes a slip clutch to protect the hopper mechanism and drive from breaking should an obstruction enter the hopper. The hopper support bracket is attached to the front mounting pad on the tractor clutch housing.

The fertilizer drops through a smooth flexible steel tube to the applicator.

Applicator Different for Each Planter

The applicator for C-54A is an opener disk and boot with a square standard which is mounted in a slot on the planter ground unit tool bar and to the left side of the planter disk opener. The disk runs in a cleft in the gauge shoe. It places the fertilizer in a band to one side of seed. The disk standard can be adjusted

up or down so that the fertilizer can be placed above or below the seed. A shield between the planter furrow opener and the fertilizer disk prevents the seed and fertilizer from mixing. A disk covers the fertilizer.

C-53A applicator is an opener disk with boot and a round standard that is attached by an adjustable bar in the slot in the under side of the planter unit right tool bar. It can be adjusted up or down and sideways so that the fertilizer can be deposited in practically any relation to the seed desired. Covering blades cover the fertilizer.

C-53B fertilizer attachment tube is held in position in back of the sweep and deposits the fertilizer on top of the soil to one side of the planter furrow opener.

Special Equipment

Deep fertilizer applicators (for C-270 and C-272 planters, and for all fertilizer attachments when used with C-244 cultivator). Bedding attachment with fertilizer furrow shovel opener (double-point). Corn furrow shovel opener (for use with bedding attachment).

Specifications

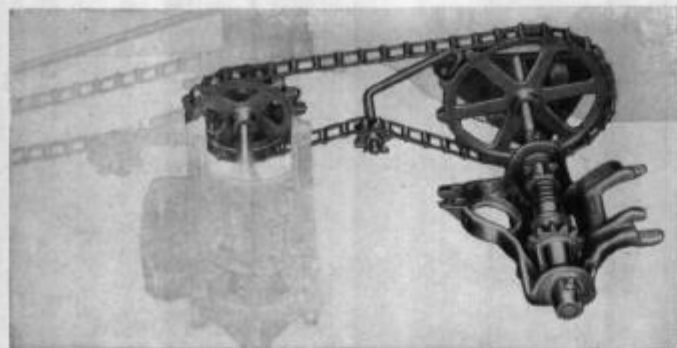
Planter Number	Fertilizer Attachment No.	Applicator (regular)	Net Weight (Approx.)
C-270	C-54A	Disk openers and covers	.....
C-271	C-53B	Tubes clamped in back of sweep.....	.....
C-272	C-53A	Disk openers and blade covers.....	.....



Farmall C

Fertilizer Attachments

For Cotton and Corn Planters (Continued)



Illust. 1 — Hopper drive and supporting bracket for C-53-A, C-53-B, and C-54-A Fertilizer Attachments. The fertilizer drive is automatically controlled in unison with the planter seed plate drive.

Hoppers

The hoppers are the standard fertilizer hopper for all row-crop machines, a cross-section of which is shown on page 191-E. The hoppers for these attachments are the large size having a capacity of 65 pounds (based on commercial fertilizer).

This type hopper is of the star-feed type which delivers various types of fertilizer in a constant even stream. A lever with 40-notch quadrant gives accurate control of the quantity of fertilizer deposited. Three sizes of feed wheels are available to provide application rates from 45 to 800 pounds per acre. They are as follows:

- NC-316 Feed wheel (regular) for average delivery
- NC-115 Feed wheel (special) for maximum delivery
- NB-2554 Feed wheel (special) for minimum delivery

The hopper can be easily dismantled without tools for cleaning.

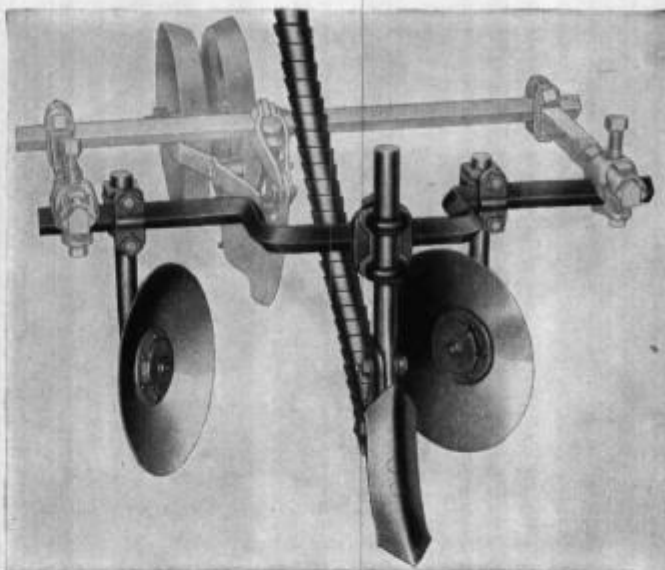
Side-Dress Crop with Fertilizer when Cultivating

Any one of the fertilizer attachments can be used with the C-244 cultivator. All that is necessary is to remove the planter hopper unit and drive the fertilizer hopper directly from the sprocket on the automatic engaging and disengaging clutch unit mounted on the tractor stub shafts.

The fertilizer tubes can be attached to the rear of

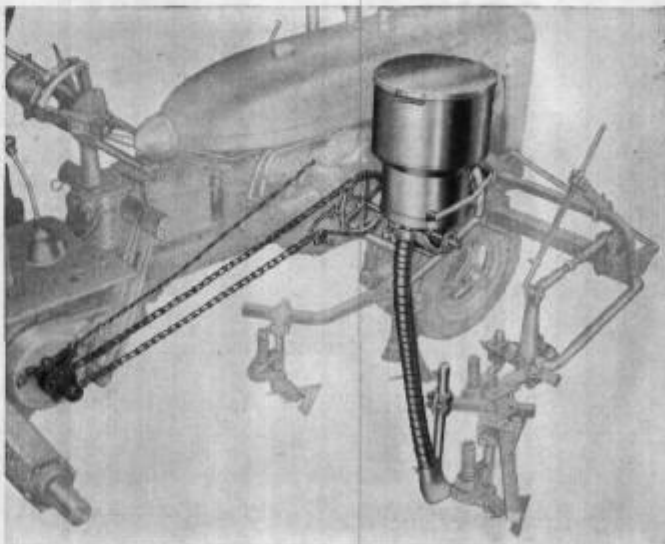


Illust. 2 — Deep Fertilizer Applicators can be supplied as special equipment in place of the regular disk applicators for the C-272 planter fertilizer attachment. The deep applicator consists of a 1 1/4-inch round standard with diamond point shovel and fertilizer boot. The fertilizer is deposited in a narrow furrow at any designed depth. By adding a tool bar and "U" clamp it can be used with the C-244 cultivator for side-dressing.



Illust. 3 — Bedding Attachment with double-point fertilizer furrow shovel opener for C-272 planter. This attachment is used for throwing up a bed and depositing the fertilizer in the base of the bed. The shovel (less disks) can be used also for opening a narrow, shallow furrow for planting corn and similar crops. Where a wider, deeper furrow is desired for this purpose a special Corn Furrow Shovel Opener can be interchanged on the same standard.

the cultivator standard next to the row or if deep application is desired the deep fertilizer applicator attachment can be obtained. It consists of a standard with diamond point and fertilizer spout with parts to attach it to the cultivator tool bar.

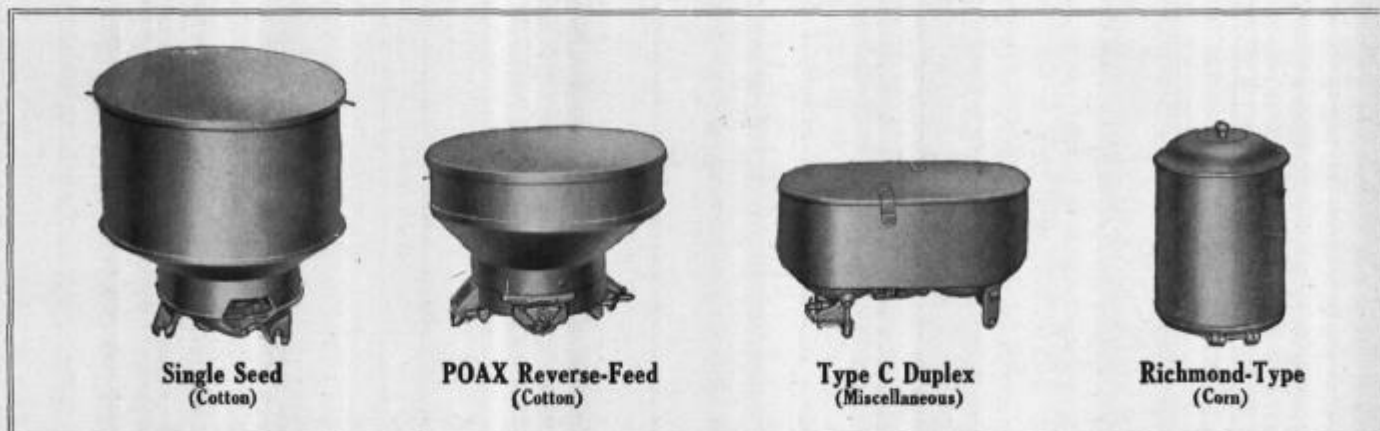


Illust. 4 — The owner who has a fertilizer attachment for his Farmall C planter can use it for side dressing with the C-244 cultivator by rearranging the drive, as shown, and ordering the deep fertilizer applicator. With this equipment the fertilizer is deposited well below the surface in the root zone where the crop will derive maximum benefit from it and the fertilizer will not stimulate weed growth.



Hoppers for Cotton and Corn Planters

For Farmalls C and Super-A



Illust. 1—These four types of hoppers are available for Farmall C and Super-A cotton and corn planters.

Shown here are the different types of hoppers available for Farmall C cotton and corn planters. Hoppers for the Farmall Super-A planters are similar in function and design to the above but differ somewhat in their mounting and drive parts. These four types of hoppers can be interchanged on the same planter thus permitting the owner to plant efficiently virtually any kind of seed without having to purchase an entire new machine.

The type of hopper which is furnished with any individual planter is listed under the Regular Equipment for each machine. Should the owner wish to change from the original hopper equipment purchased with his planter to another type he can obtain any one of the other hoppers as a conversion attachment—(see Table on page 200-A.) These attachments include all parts necessary to make the changeover.

Hopper Types

Single-Seed: The single-seed cotton hopper is especially adapted to accurate planting of well-delinted cotton seed. It will also handle various other kinds of seed, such as corn, sorghums, peas, beans, shelled peanuts, etc., when fitted with the proper seed plates. A variety of cotton plates, flat drop plates and peanut plates are available—(see Seed Plates, page 200-B).

The single-seed hopper mechanism accurately meters and drops a single seed at a time for uniform spacing within the row. Different spacings can be obtained by changing drive sprockets and/or by using seed plates having a greater or lesser number of cells.

POAX Reverse Feed: This hopper does an excellent job of separating poorly delinted cotton seed and feeding it in a uniform stream into the furrow. The quantity of cotton planted is regulated by a valve in the hopper, controlled by a thumb nut. An agitator works the seed down to the bottom of the hopper where a revolving picker wheel delivers it to a ratchet-toothed feed wheel located at the outer edge of the hopper bottom. This feed wheel revolves in an opposite direction to the picker wheel, hence the name "reverse-feed."

The POAX hopper can be converted from cotton to corn by removing the regular cotton equipment and substituting the special

Corn Equipment parts (R-17108). Various seed plates are available for use with the Corn Equipment to permit planting not only corn but peas, beans, etc.—(see page 200-B).

Type C Duplex: The Duplex hopper can be adapted to plant a great variety of seeds—corn, beans, peas, whole or shelled peanuts, sorghums, vetch, in fact, almost any seed except cotton, by simply changing the seed plates. For list of Seed Plates turn to page 200-C.

This hopper is divided into two sections to permit planting two kinds of seed simultaneously (for example, corn and beans), either in alternate hills or in the same hill. The same kind of seed can be put in both sections for planting twice as heavy or only one section can be used to obtain thinner planting. Seeds can be dropped almost any distance apart in the row by using different size driving gears and/or plates with different number of cells.

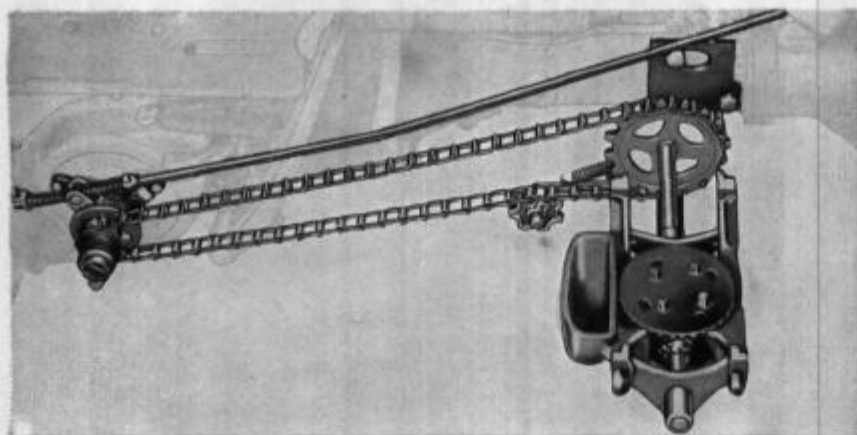
Richmond-Type: This hopper is designed for precision planting of hybrid and other varieties of corn as well as many other seeds. A large assortment of seed plates—(see pages 191-F and G)—is available for accurate planting of seeds ranging in size from tiny tomato seed to large lima beans. Planting distances are regulated by the use of different size drive sprockets and/or by using seed plates with a different number of cells.

Corn and Pea Attachments

Illust. 2—This shows the No. 23 Corn and Pea Attachment which is interchangeable with the single-seed cotton hopper. The attachment consists of double hoppers, one above the other, for planting corn and peas simultaneously in the same row. The No. 18 corn and pea attachment is similar in function but is designed for interchanging with the Richmond-Type corn hopper.



Farmall C Hoppers for Cotton and Corn Planters



Illust. 1 — All Farmall C cotton and corn planters are regularly equipped with an automatic throwout mechanism on the seed plate drive controlled from the Farmall Touch-Control power arms. Shown here also is the supporting bracket used for the POAX reverse-feed cotton hopper. The drive is the same but the hopper supporting brackets vary for different hoppers.

Hopper Drives

Shown on this page are the hopper seed plate drive and supporting brackets as they pertain to the Farmall C planters. The hopper mechanisms are operated by chain drives and sprockets from stub shafts mounted on the tractor brake drum. These stub shafts are not included with the planter but must be ordered as an attachment for the tractor. The chain drives are provided with automatic throwout mechanisms connected by linkage to the Touch-Control power arms so that they automatically engage and disengage the drive as the ground unit is lowered and raised. A safety slip clutch feature on the hopper feed shaft prevents breakage should the hopper mechanism become accidentally clogged. The seed plate drive is the same for all hoppers and requires no alteration when interchanging hoppers.

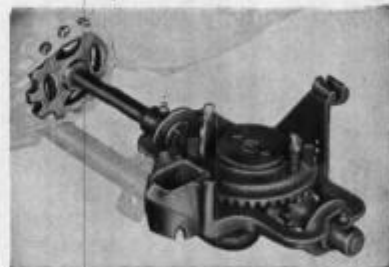
Hopper Supporting Brackets

The hopper supporting frames are quick-change attached to mounting pads on the tractor. They require no alteration when different hoppers are interchanged on the planter. The hopper supporting brackets vary, however, for different hoppers and are included as a part of the Hopper Conversion Attachment. Illustration 1 shows the seed plate drive and the supporting bracket for the POAX reverse-feed cotton hopper. This same bracket will also accommodate the Type C Duplex hopper by adding the seed plate pinion gear shown in Illustration 2. This permits quick and easy interchange of the two types of hoppers for planting cotton and any of the large variety of other row crops commonly grown in the South. Illustration 3 shows the bracket required for the Richmond-type hopper and Illustration 4 shows the bracket used with the single-seed cotton hopper. When the Fertilizer Attachment is used, the fertilizer drive is operated from a sprocket attached to the planter hopper drive shaft.

Illust. 2 — Hopper supporting bracket for the Type C Duplex hopper. It is the same as the supporting bracket used with the POAX hopper shown above but has an additional, easy-to-insert drive pinion.



Illust. 3 — Supporting bracket for the Richmond-type hopper. This bracket will also accommodate the No. 18 Corn and Pea Attachment.



Illust. 4 — Supporting bracket for the single-seed cotton hopper. This bracket will also accommodate the No. 23 Corn and Pea Attachment.



Hoppers for Cotton and Corn Planters



HOPPER CONVERSION ATTACHMENTS (For Farmall C and Super-A Planters)

Conversion Hopper	For Planters Equipped With Any of Following	Planter Number	Conversion Attachment Number
Richmond-Type	Single-Seed Type "C" Duplex	A-170 A-171 A-172	512 919 R91
		C-270 C-271 C-272	513 435 R91
	POAX Reverse Feed	A-170 A-171 A-172	514 249 R91
		C-270 C-271 C-272	514 483 R91
Single-Seed	Richmond-Type Type "C" Duplex	A-170 A-171 A-172	514 251 R91
		C-270 C-271 C-272	514 485 R91
	POAX Reverse Feed	A-170 A-171 A-172	514 250 R91
		C-270 C-271 C-272	514 484 R91
Type "C" Duplex	POAX Reverse-Feed	A-170 A-171 A-172	514 253 R91
		C-270 C-271 C-272	514 487 R91
	Richmond-Type Single-Seed	A-170 A-171 A-172	514 252 R91
		C-270 C-271 C-272	514 486 R91
POAX Reverse-Feed	Type "C" Duplex	A-170 A-171 A-172	514 253 R91
		C-270 C-271 C-272	514 487 R91
	Richmond-Type Single-Seed	A-170 A-171 A-172	514 252 R91
		C-270 C-271 C-272	514 486 R91

Special Seed Plate Bundles and Hopper Equipment

(For Type C Duplex Hopper)

Special seed plate bundles and miscellaneous equipment are available for the various types of hoppers as shown below. In addition there are a large variety of seed plates available individually, as ordered. For a complete list of such plates refer to pages immediately following.

(For Single-Seed Cotton Hopper)

No. 7 peanut attachment
No. 8 peanut attachment
No. 23 corn and pea attachment

(For POAX Reverse-Feed Cotton Hopper)

R-17108 corn equipment

No. 501 seed plate bundle
No. 514 seed plate bundle
No. 526 seed plate bundle
511 629 R91 seed plate bundle
R-7038 seed plate, 40-cell (For large snap beans such as commercial grade No. 1 Bountiful)
R-7039 seed plate, 40-cell (For medium snap beans such as commercial grade No. 2 Bountiful or No. 1 grade Black Valentine or Tendergreen varieties)
R-7040 seed plate, 40-cell (For small snap beans such as commercial grade No. 3 Bountiful or No. 2 grade Black Valentine or Tendergreen varieties)
R-7041 seed plate, 16-cell (For beans such as Ford Hook or Bush Limas)

(For Richmond-Type Hopper)

Note: Any seed plate supplied by Richmond Works for corn planters can be used with this hopper.
43240-A brush cut-off (For use with 3559-A seed plate)
No. 18 corn and pea attachment



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Seed Plates

FOR SINGLE-SEED HOPPER

Part Number of Seed Plate	No. of Cells	Size of Cells	Comparative Size of Cells	Seed per Cell	Typical Seed	Included in Seed Plate Bundle No.
7937		Blank Plate— $\frac{5}{32}$ -in. thick (drilled as ordered) (used with Single Seed Bottom Plate PO 1821 A)				139, 149, 186
PO 1980		Blank Plate— $\frac{5}{32}$ -in. thick (drilled as ordered) (used with Auxiliary Bottom Plate PO 1978)				167
PO 1746		Blank Plate— $\frac{9}{32}$ -in. thick (drilled as ordered) (used with PO 1731 Cut-off Plate and PO 1821A Bottom Plate)				
PO 2965	3	$\frac{5}{8}$ -in. dia.	Medium	1	Corn.....	188
7932	4	$\frac{5}{8}$ -in. dia.	Medium	1	Corn.....	188
7933	5	$\frac{5}{8}$ -in. dia.	Medium	1	Corn.....	139, 185, 186, 188
7934	6	$\frac{5}{8}$ -in. dia.	Medium	1	Corn.....	139, 185, 186, 188
7935	7	$\frac{5}{8}$ -in. dia.	Medium	1	Corn.....	185, No. 23 corn & pea
7952	8	$\frac{5}{8}$ -in. dia.	Medium	1	Corn.....	139, 185, 186
PO 1979	10	$\frac{3}{16}$ -in.	Small	1	Kaffir Corn.....	167
7936	12	$\frac{3}{16}$ -in.	Small	1	Kaffir Corn.....	139
PO 1017	6	$\frac{3}{8}$ rd.	Medium	1	Peas.....	149
PO 1018	7	$\frac{3}{8}$ rd.	Medium	1	Peas.....	149
PO 1019	8	$\frac{3}{8}$ rd.	Medium	1	Peas.....	No. 23 corn & pea
PO 1700 A	14			1	Peanuts Shelled.....	No. 7, 8 peanut attach.
PO 1910	8			1	Peanuts Shelled.....	No. 7, 8 peanut attach.
PO 1911	9			1	Peanuts Shelled.....	No. 7, 8 peanut attach.
PO 1912	10	$\frac{15}{32}$ -in.		1	Peanuts Shelled.....	No. 7, 8 peanut attach.
PO 2788	12	$\frac{15}{32}$ -in.		1	Peanuts Shelled.....	No. 7, 8 peanut attach.
PO 2789	14	$\frac{15}{32}$ -in.		1	Peanuts Shelled.....	No. 7, 8 peanut attach.
PO 1729	18	$\frac{3}{4}$ -in. dia. ($\frac{1}{16}$ -in. thick)	Large	1	Beans.....	
PO 1730	20	$\frac{3}{4} \times \frac{1}{2}$ -in. ($\frac{1}{16}$ -in. thick)	Large	1	Beans.....	
PO 2937	13	$\frac{9}{32} \times \frac{1}{2}$ -in. ($\frac{1}{16}$ -in. thick)		1 & 2	Cotton.....	
PO 378 A	20	$\frac{9}{32} \times \frac{1}{2}$ -in. ($\frac{1}{16}$ -in. thick)		1 & 2	Cotton.....	185, 188
PO 2786	26	$\frac{9}{32} \times \frac{1}{2}$ -in. ($\frac{1}{16}$ -in. thick)		1 & 2	Cotton.....	
7980 A	32	$\frac{5}{16} \times \frac{1}{2}$ -in. ($\frac{1}{16}$ -in. thick)		2	Cotton.....	185, 188
PO 1732	38	$\frac{15}{32} \times \frac{33}{64}$ -in. ($\frac{1}{16}$ -in. thick)		3 & 4	Cotton.....	188
7941 A	42	$\frac{5}{16} \times \frac{7}{16}$ -in. ($\frac{1}{16}$ -in. thick)		2	Cotton.....	185, 188
PO 1816	19	$\frac{19}{32} \times \frac{13}{32}$ -in. ($\frac{1}{16}$ -in. thick)			Cotton.....	166
PO 1817	13	$\frac{19}{32} \times \frac{13}{32}$ -in.			Cotton.....	166

FOR "POAX" REVERSE-FEED HOPPER

Equipped with R-17108 Corn Equipment

Part Number of Seed Plate	Number of Cells	Size of Cells	Comparative Size of Cells	Seeds per Cell	Typical Seed
CP 5111 Blank Plate— $\frac{3}{16}$ -in. thick (drilled as ordered)					
R 7015 Blank Plate— $\frac{3}{16}$ -in. thick (drilled as ordered)					
CP 5107	4	$\frac{5}{8}$ -in. rd.	Medium	1	Corn
CP 5108	5	$\frac{5}{8}$ -in. rd.	Medium	1	Corn
CP 5109	6	$\frac{5}{8}$ -in. rd.	Medium	1	Corn
CP 5110	7	$\frac{5}{8}$ -in. rd.	Medium	1	Corn
CP 5112	24	$\frac{5}{16}$ -in. rd.	Small	1	Peas, Soy Beans
CP 5113	24	$\frac{3}{8}$ -in. rd.	Medium	1	Peas, Small Corn
CP 5114	24	$\frac{15}{32}$ -in. rd.	Medium	1	Small Corn
CP 5115	18	$\frac{21}{32} \times \frac{37}{32}$ -in.	Large	1	Lima Beans
CP 5116	6	$\frac{3}{8}$ -in. rd.	Small	1	Small Corn
CP 5117	7	$\frac{3}{8}$ -in. rd.	Small	1	Small Corn
CP 5118	8	$\frac{3}{8}$ -in. rd.	Small	1	Small Corn
CP 5165	3	$\frac{3}{8}$ -in. rd.	Small	1	Small Corn
R 7021	20	$\frac{9}{16} \times \frac{27}{32}$ -in.	Medium	1	Kidney Beans



Seed Plates

For Type "C" Duplex Hopper

Number of Seed Plate	Number of Cells	Seeds per Cell	Typical Seed	Included in Seed Plate Bundle No.
R 7016	4	5-7	Beans-Biloxi Soy	
CPB 5151	8	1	Biloxi Soy	514
CPB 5017	24	1	Biloxi Soy	
CP 5197	40	1	Bountiful	
R 7038	40	1	Bountiful	Special Bean
R 7039	40	1	Bountiful	Special Bean
R 7040	40	1	Bountiful	Special Bean
CP 5194	12	1	Fordhook Lima	
R 7041	16	1	Fordhook Lima	Special Bean
CP 5197	40	1	Giant Stringless	
CP 5195	12	2	Henderson Bush Lima	
CP 5178	4	1	Laredo Soy	
CPB 5017	24	1	Laredo Soy	
CP 5193	8	3-4	Mammoth Yellow Soja	501
CP 5192	24	1	Mammoth Yellow Soja	
CP 5196	24	2	Mung Soy	
CPB 5150	8	1	O-Too-Tan-Soy	
CPB 5140	2	1	Velvet (small)	
CPB 5015	4	1	Velvet (small)	500, 514, 526, 511 629 R91
CPB 5149	4	1	Velvet (large)	
CPB 5132	4	1	Corn -Hickory King	514
CPA 5166	8	1	Hickory King	
CPB 5141	12	1	Kaffir, Sorghum, etc.	
CPB 5134	2	1	Large	
CPB 5132	4	1	Large	501
R 7028	4 twin	1	Large	
CPA 5166	8	1	Large	501
CPB 5135	2	1	Small	
CPC 5133	4	1	Small	500
CPC 5044	8	1	Small	500, 514
R 7022	4	1	Small thin	526, 511 629 R91
CPB 5017	24	1	Crotalaria	
CPB 5148	36	1	Cucumber	
CP 5197	40	4-5	Okra	
R 5000	8	1	Peanuts, Field, shelled	
R 7000	8	1	Field, shelled	
CP 5195	12	1	Field, shelled	
R 7035	12	1	Field, shelled	526
R 7034	16	1	Field, shelled	
R 7033	24	1	Field, shelled	511 629 R91
CP 5167	8	1	Field, in shell	
CP 5199	8	1	Jumbo, shelled	
CP 5194	12	1	Jumbo, shelled	501
CPC 5144	3	1	Spanish, shelled	
CPC 5147	8	1	Spanish, shelled	
CPC 5014	12	1	Spanish, shelled	501
R 7032	12	1	Spanish, shelled	526
R 7029	16	1	Spanish, shelled	
R 7031	24	1	Spanish, shelled	511 629 R91
CPB 5013	8	1	Spanish, in shell	500
CP 5175	12	1	Spanish, in shell	
CP 5198	18	4-5	Peas	
CPB 5016	24	1	Peas	514
CP 5192	24	2	Peas-Austrian	
CPB 5151	8	1	Peas-California Blackeye	
CP 5198	18	3-4	Peas-Crowder	
CP 5198	18	3-4	Peas-Little Marvel	
CP 5198	18	4-5	Peas-Thos. Laxton	
R 7027	4	4	Pepper Seed	
CPB 5141	12	1	Sorghum, Kaffir Corn, etc.	
R 7027	4	4	Tomato Seed	
R 7030	8	1	Tung Nuts	
CPB 5016	24	5	Vetch-Hairy	500

For Flat and Edge-Drop (Richmond-Type) Hopper

Any of the flat-drop, edge-drop or hill-drop plates listed on pages 191-F and G under *Corn Planters* can be used with Cotton and Corn Planters equipped with Richmond-type hopper.





No. 96 Series Cotton and Corn Planters

Combination-Type Planters and Fertilizer Attachments for Farmall Cultivators

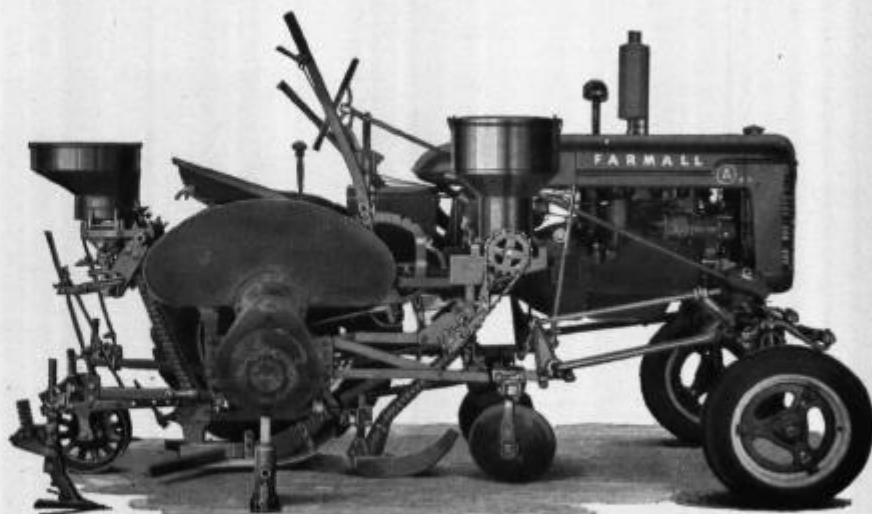
Planters:

A-96, AV-96, B-96 and HM-96

Fertilizer Attachments:

A-44, AV-44, B-44 and HM-44

Illust. 1—Farmall-A with combination equipment—the A-96 planter (with duplex hopper), the A-44-D fertilizer attachment, and an A-138 hand lift cultivator. (Tractor drive wheel removed for better illustration.)



- Accurate planting and fertilizing in curved rows.
- Bedding, fertilizing, and planting in one operation—same equipment for side dressing with cultivator.
- Hoppers and plates for wide variety of seeds.

The No. 96-type planters and the No. 44-type fertilizer attachments are especially designed for low-cost, labor-saving operation in terraced or contoured fields. This equipment, which uses a Farmall cultivator to provide the basic framework, makes it possible to prepare beds, plant, and fertilize in one operation and, when planting is completed, to side-dress the crops when cultivating.

Regular Equipment — Planters

POAX cotton hoppers or Type "C" duplex hoppers, as ordered. Runner openers. Clod fenders. Gauge shoes. Covering blades. Press wheels.



Illust. 2—Farmall-B with 2-row B-96 planter and B-44-E fertilizer attachment.

Special Equipment — Planters

POA cotton and corn hoppers. No. 18 (9-in.) disk covering attachment. Spring-tooth covering attachment. Disk marker. Runner wings and dirt shields. No. 17 hill-drop attachment for A-96. No. 18 hill-drop attachment for B-96 and HM-96. No. 27 hill-drop attachment for AV-96. Narrow-row attachment to convert A-96 or AV-96 planter to a 2-row machine (rows spaced 24, 26 or 28-in. apart).

Specifications — Planters

No.	No. Rows	Lift	Net Weight (Approx.)
A-96	1	hand.....	327 lb.
A-96	1	power.....	304 lb.
AV-96	1	hand.....	338 lb.
AV-96	1	power.....	315 lb.
B-96	2	hand.....	594 lb.
B-96	2	power.....	573 lb.
H-96	2	power.....	538 lb.
M-96	2	power.....	544 lb.

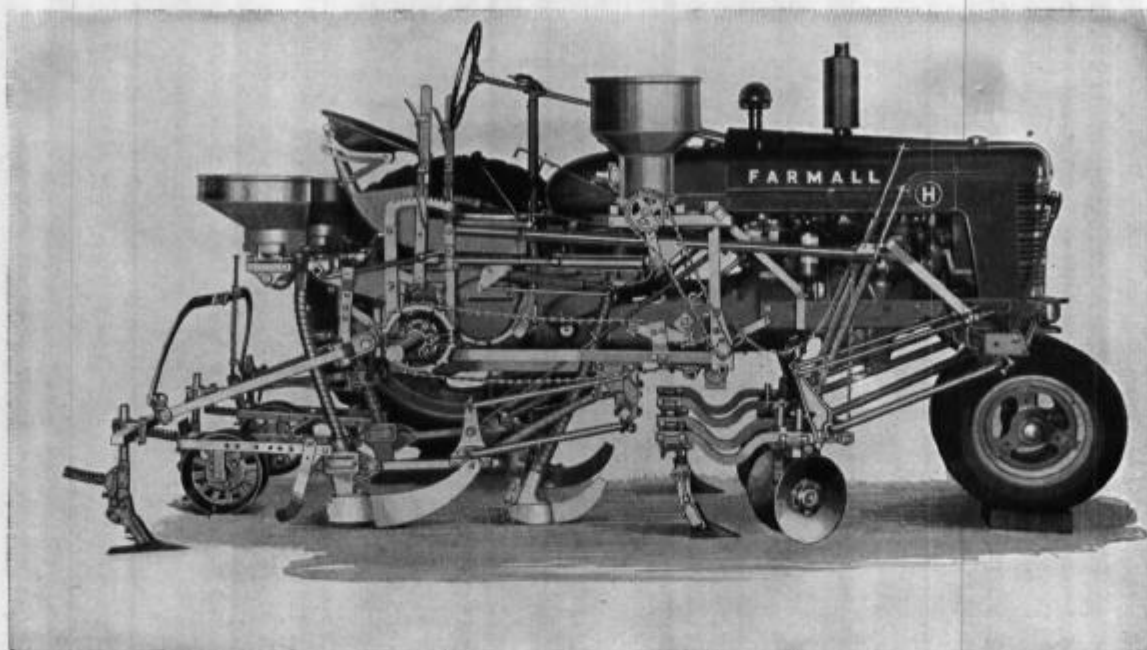
Specifications — Fertilizer Attachments

No.	For use with Cultivator	Net Weight (Approx.)
A-44-D	A-138.....	211 lb.
A-44-E	A-136.....	208 lb.
AV-44-D	AV-138.....	212 lb.
AV-44-E	AV-136.....	209 lb.
B-44-D	B-238.....	351 lb.
B-44-E	B-236.....	342 lb.
B-44-F	B-221.....	358 lb.
HM-44-D	HM-238 and HM-240.....	510 lb.
HM-44-E	HM-236.....	495 lb.
HM-44-F	HM-221.....	493 lb.



No. 96 Series Cotton and Corn Planters

(Continued)



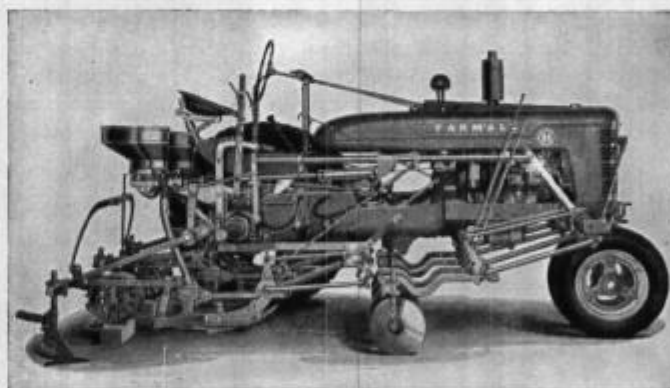
Illust. 1—The HM-96 planter, HM-44-D fertilizer attachment and HM-238 power-lift cultivator with ground equipment for use in water furrows. Row spacings are from 38 to 48 inches.

Accurate Work on Curved Rows

In accordance with methods developed by the National Joint Committee on Fertilizer Application, these machines deposit fertilizer to one side of the seed and at somewhat greater depth. The units work close together under the tractor rear axle. The planter deposits the seed directly behind the axle. It is supported by the rear section of the cultivator, which also carries sweeps to loosen the ground behind the tractor wheels. The fertilizer attachment places fertilizer just ahead of the axle. Bedding equipment, which is supplied as part of the fertilizer attachment, is carried on the front gangs of the cultivator in place of the usual sweeps or shovels. For side dressing, the opener and bedding equipment is removed, the cultivator sweeps or shovels are replaced, and the tubes are brought forward.

Versatile Planters

With this versatile combination it is possible to plant cotton on low beds, corn or velvet beans in water furrows, and peanuts—either shelled or in the shell—in shallow furrows. The planter is available either with cotton hoppers, or with slant-plate duplex hoppers which handle nearly every kind of seed except cotton. Hoppers are readily interchangeable. The man who grows two crops such as cotton and peanuts can therefore purchase both kinds and quickly change hoppers



Illust. 2—HM-238 cultivator and HM-96 planter and bedding equipment, which can be supplied separately if fertilizer equipment is not desired. In this view the tools are set for work on beds or on the flat.

when required. The cotton hoppers have non-bridging, spring-type agitators. They can be supplied with corn cut-off and plates for planting corn, beans, grain sorghums, and similar seeds.

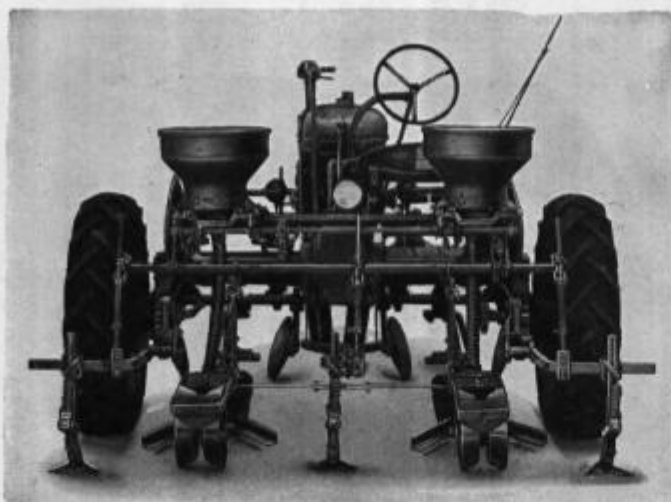
Ground Equipment

The planters are equipped with runner openers, gauge shoes, clod fenders, covering blades and press wheels. The press wheels can be set to float, or they can be set rigid for depth control when used in trenches without gauge shoes.



No. 96 Series Cotton and Corn Planters

(Continued)

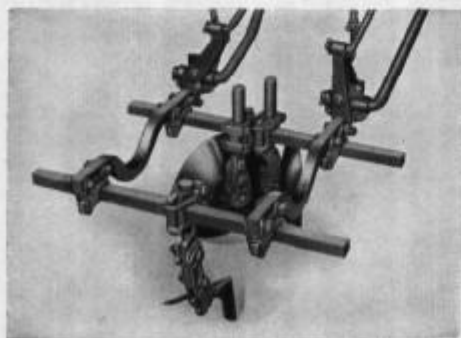


Illust. 1 (left)—Rear view of the B-96 planter. The A-96 for Farmall-A can also be supplied as a 2-row machine for planting peanuts and similar crops in rows spaced 24, 26 or 28-in.

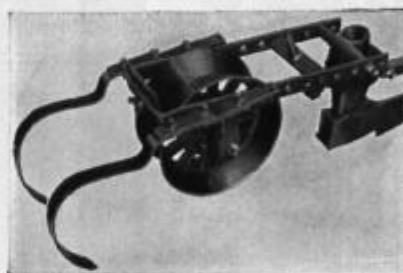
The fertilizer attachments for the A-96, AV-96, B-96 and HM-96 planters are of similar construction but differ somewhat in regard to bedding equipment for use with various cultivators. The purchaser of a fertilizer attachment should therefore always specify the cultivator (see Specifications-Fertilizer Attachments).

Fertilizer Attachments

The fertilizer attachments have star feed hoppers, each with two feed wheels, two discharge openings, and two tubes. When used with the planter, the two tubes can be brought together to discharge through the fertilizer opener or, if desired, the one hopper discharge may be closed off and only one tube attached to the opener. For side dressing when cultivating, the two tubes can be separated to discharge back of each cultivator front shovel.



Illust. 2—Bedding equipment with extra tool bar and sweep for work in water furrows. Available for use with HM-236, HM-238, and HM-240 cultivators.



Illust. 3 (above)—Spring-tooth covering attachment, available for use with any of the A-96 planters.



Illust. 4 (right)—Disk covers are available as special equipment.



Illust. 5—Gauge shoes with clod sweeps and blade covers.



Nos. 99 and 100 Series Cotton and Corn Planters

- **Blackland Planters:**
A-99, B-99, and HM-99
- **Runner Planters:**
A-100, B-100, and HM-100
- **Fertilizer Attachments:**
A-45, B-45, and HM-45

Here are simple, flexible planter and fertilizer combinations for use with cultivators. The units are forward-mounted on the cultivator front gangs where they are always in full view of the operator and can be used either with or without the front shovels. The openers are located close together to provide accurate placement of the seed in relation to the fertilizer. Large sprockets, one on each side of the tractor axle, assure uniformity of seed spacing. A simple, vertical adjustment on the cultivator parallel rods provides accurate control of suction on the ground tools.

Regular Equipment

No. 99-series Blackland planters: Single seed cotton hoppers, shovel openers and pin-break shovel coverers.

No. 100-series Runner planters: Single seed cotton hoppers, runner openers and open-center press wheels.

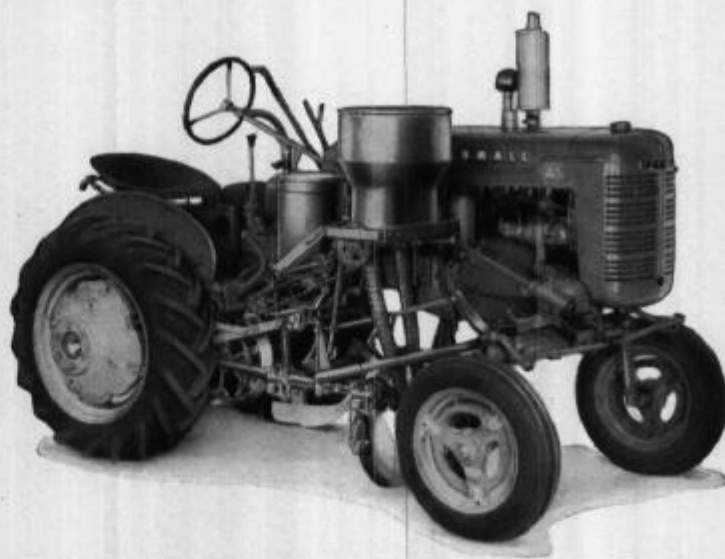
Special Equipment

Type "A" cotton and corn hoppers; type "C" duplex hoppers; POAX cotton hoppers; or POA cotton and corn hoppers in lieu of regular. Corn and pea hoppers in lieu of regular as follows: No. 23 for "99" planters, No. 24 for B-100 and HM-100 planters. No. 14 spring-trip shovel coverers or press wheels for "99" planters in place of pin-break shovel coverers.

Specifications — Planters

Model No.	Type Planter	Use with Cultivator*	Net Weight (Approx.)
A-99	Blackland	A-136 or A-138, hand or power lift.....	183 lb.
A-100	Runner	A-136 or A-138, hand or power lift.....	190 lb.
B-99	Blackland	B-236 or B-238, hand or power lift.....	335 lb.
B-100	Runner	B-236 or B-238, hand or power lift.....	340 lb.
HM-99	Blackland	HM-236, HM-238 or HM-240, regular or delayed power lift.....	418 lb.
HM-100	Runner	HM-236, HM-238 or HM-240, regular or delayed power lift.....	414 lb.

*When ordering, specify type of lift.



Illust. 1 — The Farmall-A tractor with the A-236 cultivator, the A-100 planter, and the A-45-E fertilizer attachment.



Illust. 2 — This is the HM-100 planter.

No. 7 and No. 8 peanut attachments. Covering blades for "100" planters. Runner blades and dirt shields for "100" planters. Hill-drop attachments as follows: No. 19 for A-99 planters, No. 20 for B-99 planters, No. 21 for HM-99 planters, No. 22 for A-100 planters, and No. 24 for HM-100 planters. Planter sweeps, 14 to 24 inches.

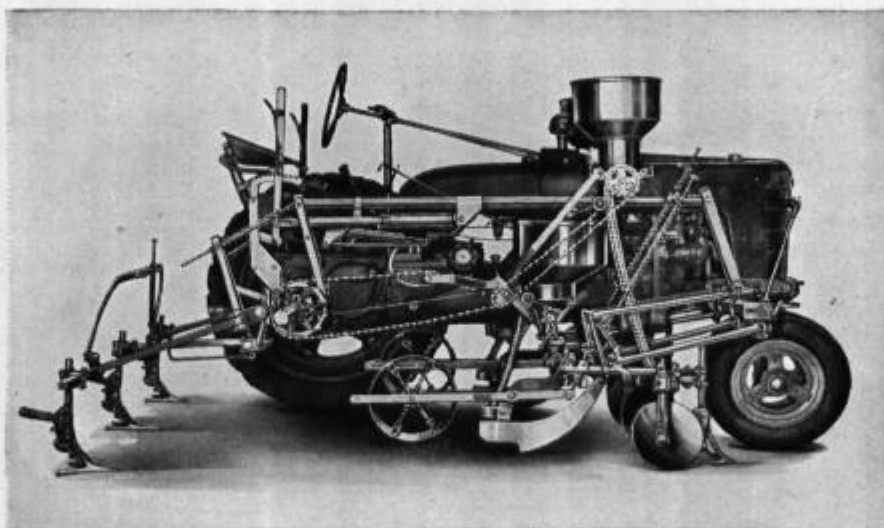
Specifications — Fertilizer Attachments

No.	For Planter	For Cultivator	Net Weight (Approx.)
A-45-A	A-99	A-136, A-138.....	102 lb.
A-45-D	A-100	A-138.....	172 lb.
A-45-E	A-100	A-136.....	180 lb.
B-45-A	B-99	B-136, B-138.....	191 lb.
B-45-D	B-100	B-238.....	337 lb.
B-45-E	B-100	B-236.....	326 lb.
HM-45-A	HM-99	HM-236, 238, 240.....	205 lb.
HM-45-D	HM-100	HM-238, 240.....	351 lb.
HM-45-E	HM-100	HM-236.....	356 lb.



Nos. 99 and 100 Series Cotton and Corn Planters

(Continued)



Illust. 1 — The Farmall-H tractor with the B-236 cultivator, the HM-100 runner-type planter, and the HM-45-E fertilizer attachment.

Wide Choice of Hoppers

The planters can be had with either cotton hoppers or with duplex hoppers which handle practically every kind of seed except cotton. The planters can also be ordered with both types of hoppers for use on farms where a variety of crops are grown—the hoppers are readily interchangeable. The cotton hoppers have non-bridging spring-type agitators. They can be supplied with corn cut-offs and plates for planting corn, beans, grain sorghums and similar seeds. Also available are hill-drop attachments and corn and pea attachments.

Fertilizer Attachments

The No. 45-series fertilizer attachments have hoppers of the star-feed type, each with two feed wheels and two tubes. This construction enables the operator to use two tubes together when planting or to attach them separately behind the front cultivator shovels for side dressing.



Illust. 3 — Type C slant-plate duplex hopper, available when ordered.



Illust. 2 — Farmall-B with B-236 cultivator and the B-100 runner-type planter, shown with covering blades.



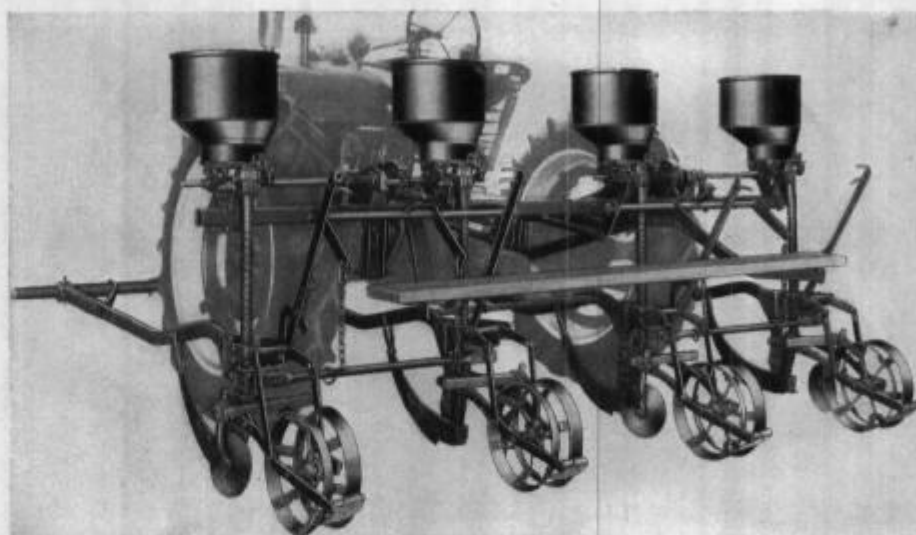
Illust. 4 — Farmall-B with the B-236 cultivator and the B-99 Blackland planter.



Rear-Mounted Cotton and Corn Planter

M-57 Four-Row for Farmall M and MD Tractors

- Free - floating planting units follow soil contour.
- Adaptable for preparing beds and distributing fertilizer, as well as drill or hill-drop planting.
- Independent planting depth adjustment.
- Hoppers adaptable for cotton or corn.
- Farmall Lift-All raises and lowers planter.



Illust. 1 — The M-57 four-row cotton and corn planter is regularly equipped with runner openers, disk coverers, and press wheels.

The M-57 four-row cotton and corn planter mounts on the rear of a Farmall M or MD tractor equipped with Farmall Lift-All. It is regularly equipped to plant four rows spaced from 36 to 42 inches apart and can be supplied with a special hitch pipe for row spacings from 36 to 48 inches. It will plant from 40 to 60 acres a day. It is regularly equipped with runner openers, disk coverers and press wheels which also control planting depth. It is raised and lowered hydraulically by Lift-All from the tractor seat. Two $1\frac{3}{4}$ -inch cylinders are required for use with the Lift-All on the tractor.

Free-Floating Units

The individual planting units are free-floating to follow the ground contour. Individual levers and quadrants make it possible to adjust the depth of each furrow opener in relation to the press wheels for hard or soft ground conditions. A platform is provided at the rear of the planter so an additional operator can change the depths of the furrow openers as required.

Plants Cotton and Corn

The single seed cotton hoppers, furnished as regular equipment, are easily converted for planting corn, kaffir and many other types of seed. The hoppers are supplied with parts for planting corn as well as cotton.

Seed plate bundles and drive sprockets, available on order, provide a wide range of planting distances. The No. 26 corn and pea attachment is available for planting corn and peas at the same time. The No. 28 hill-drop attachment provides a range of hill spacings from 10 to 18 inches, depending on the size of tractor tires and sprockets used.

Works with 4-Row Cultivator

The M-57 can be used in combination with the M-448 four-row cultivator, making it possible to work all the soil and plant in a single operation. This gives the new crop a better-than-even chance against weeds.

A bedder attachment, used in place of the regular planting units, adapts the M-57 for preparing beds. A gauge shoe attachment, required with the bedder attachment, controls the depth of the bottoms.

The disk marker attachment enables the operator to follow the guide mark with the front wheels of the tractor. The markers can be raised or lowered from either the tractor seat or the planter platform.

Specifications

No.	Description	Net Weight (Approx.) Lb.
M-57	4-Row Cotton and Corn Cultivator.....	1426

Rear-Mounted Cotton and Corn Planter

M-57 Four-Row for Farmall M and MD Tractors (Continued)

Fertilizer Attachment

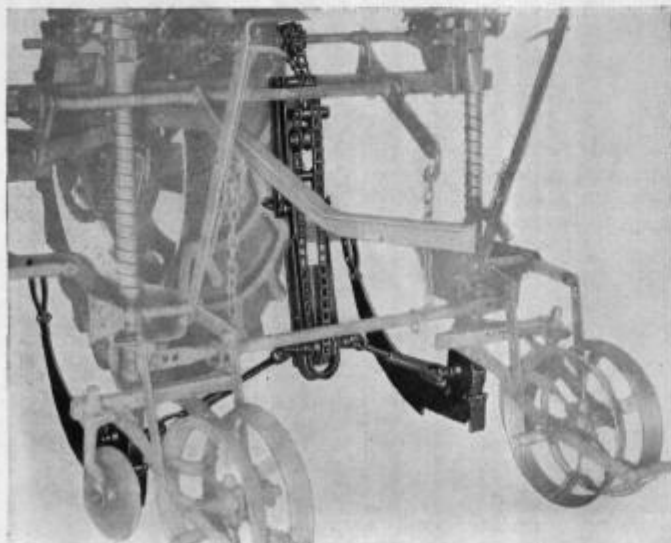
The M-55 fertilizer attachment, consisting of four large capacity, star-feed type hoppers and shovel openers, is available for adapting the machine to deposit fertilizer in the old furrows before busting and planting. The fertilizer hoppers mount on the seed hopper brackets and each fertilizer hopper is driven by one of the gears of the double pinions included on the planter. The other gear of each double pinion drives the seed hopper mechanism. To adapt the fertilizer attachment to planters built prior to 1948, four double pinions, parts number 514 254 R1, are required. The gauge shoe attachment, used with the bedder attachment, is required with the fertilizer attachment. It controls the depth of the shovel openers.

Regular Equipment

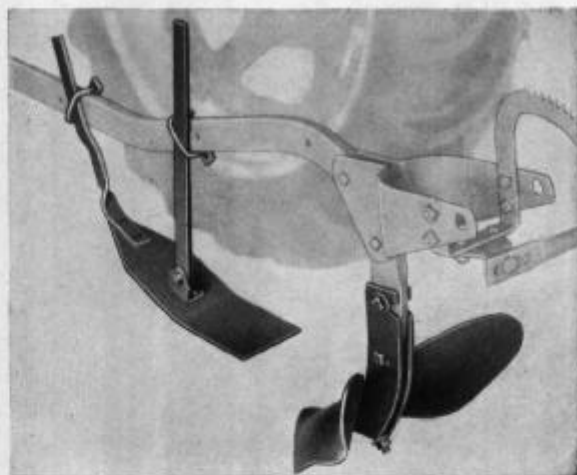
Runner openers. Disk coverers. Press wheels. Single seed cotton hoppers with parts for planting corn or cotton.

Special Equipment

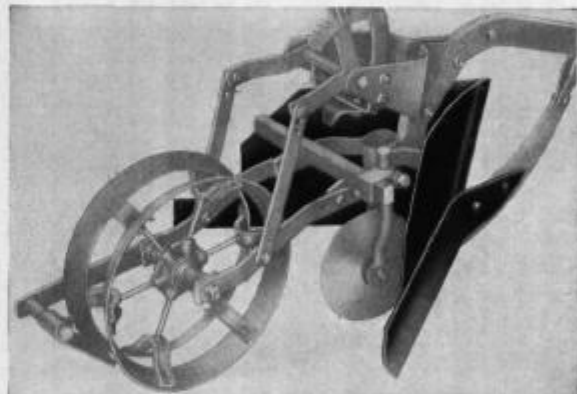
No. 26 corn and pea attachment. No. 28 hill-drop attachment. Nos. 7 and 8 peanut attachments. Runner blades and dirt shields. Disk marker attachment for 36 to 42-inch rows or 44 to 48-inch rows, as ordered. Bedder attachment. Gauge shoe attachment. M-55 fertilizer attachment. Fertilizer hopper feed wheels for light or heavy application.



Illust. 1 — The No. 28 hill-drop attachment provides a range of hill spacings from 10 to 18 inches, depending on the size of tractor tires and sprockets used.



Illust. 2 — A gauge shoe attachment (at left) is required with the bedder attachment (at right).



Illust. 3 — Runner blades and dirt shields are special equipment. With this equipment it is possible to shave off the top of the bed so that the seed is placed in moist soil and at the same time kill the weeds.



Illust. 4 — The M-55 fertilizer attachment, for distributing fertilizer in the old furrows before busting and planting, requires the gauge shoe attachment.

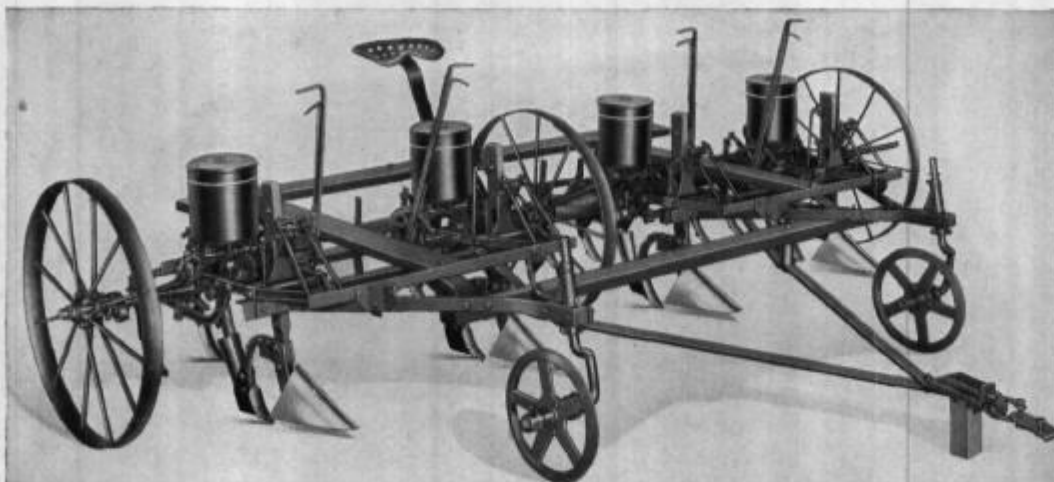


Illust. 5 — Fertilizer can be broadcast on top of the ground with the M-55 fertilizer attachment. For this operation a bracket is furnished to hold the tube in position.



FA-74 and FA-75 Cotton and Corn Planters

(Four-Row Trailing)



Illust. 1—The FA-74 four-row cotton and corn planter. The FA-75 is of similar construction except that it is equipped with reverse feed hoppers.

The FA-74 and FA-75 are four-row, cotton and corn planters for operation with the larger tractors, and are capable of planting from 40 to 50 acres per day.

The planter is carried on three main wheels. The axle is equipped with a universal joint near the center wheel. This type of construction permits the planter to follow the contour of the ground which assures a uniform planting depth. The front end of the frame is carried on a forecarriage with two caster wheels; an adjustable lever is available on special order. Footboards on the planter enable the operator to easily reach any part of the planter.

There are separate planting units for each row, driven in unison by sprockets on the planter axle. The units are adjustable for planting in rows spaced from 38 to 48 in. apart.

The standards are always in a perpendicular position regardless of the depth at which the tools are working, thus providing uniform suction on the ground working tools at all times. Provision is made in the standard for adjusting the amount of suction to suit local conditions. The sleeve in which the standard works is equipped with rollers which eliminate friction and make for easy operation of the raising lever.

FA-74 Single Seed Planter

The No. FA-74 planter is equipped with hoppers of the single seed type which plant cotton at the rate of 8 to 36 lb. to the acre. A variable drop device provides three changes of distances for each type of seed plate. Four sets of seed plates (20, 32, 40, and 42-cell) are supplied for planting cotton. Seed plates for planting corn and other crops (5 and 10-cell) can also be obtained. The 5 and 10-cell plates give planting distances of $7\frac{1}{2}$ to 19 inches.

FA-75 Reverse Feed Planter

The No. FA-75 planter is equipped with hoppers of the reverse feed or picker wheel type. A slide is provided in the bottom of the hopper to regulate the amount of cotton seed to be planted. Seed plates of

5, 8, and 12 cells which plant hills from $8\frac{1}{2}$ to 20 in. apart can be obtained for planting corn and other crops.

Regular Equipment

Forecarriage. Pin break shovel coverers.

Special Equipment

Adjusting lever attachment for forecarriage. Disk marker attachment. Disk covering attachment, spring trip covering attachment, or press wheel attachment, in place of regular pin break shovel coverers. 14 to 24-in. sweep attachments. No. 9 corn and pea attachment. Peanut attachments. No. 1 hill-drop attachment. No. 22 fertilizer attachment. No. 4 spring shoe type furrow opener in place of the regular opener.

Illust. 2—Forecarriage with adjusting lever attachment which can be supplied for FA-74 and FA-75 on special order.

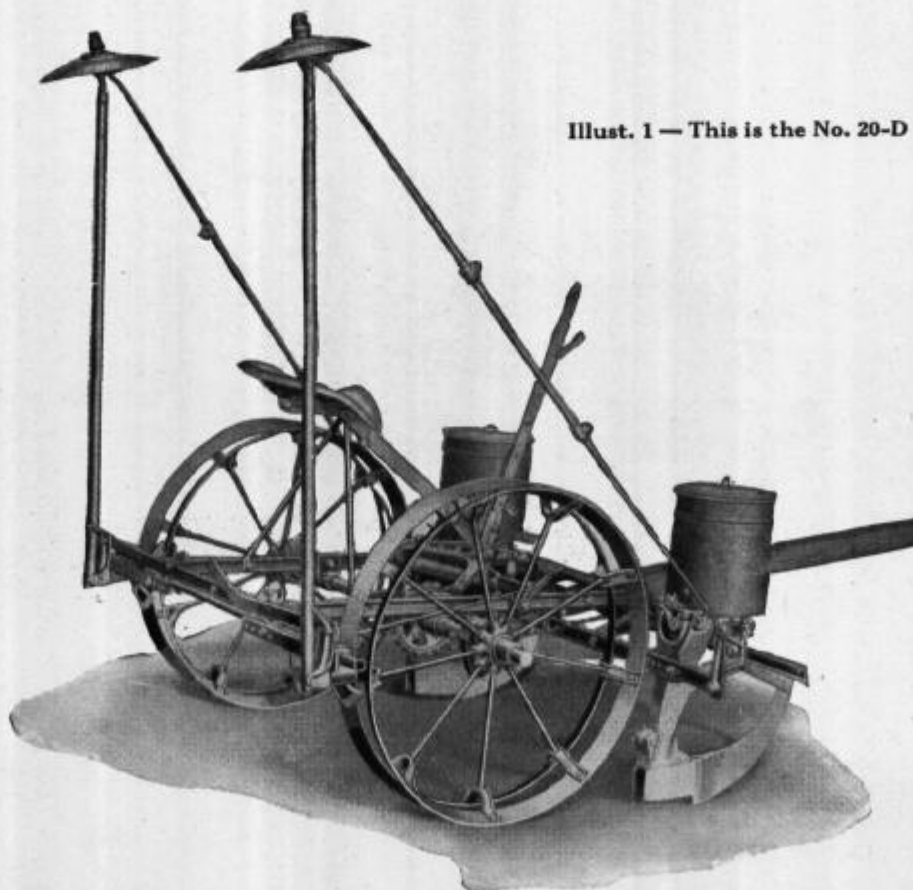


Specifications

No.	Description	Net Weight (Approx.)
FA-74	Cotton and Corn planter with single-seed hoppers.....	1634 lb.
FA-75	Cotton and Corn planter with reverse-feed hoppers.....	1550 lb.



Nos. 20 and 20-D Cotton and Corn Planters (Two-Row)



Illust. 1 — This is the No. 20-D drill planter.

The Nos. 20 and 20-D are two-row cotton and corn planters designed for horse and tractor operation. Hoppers regularly supplied are of the well-known reverse-feed type with the agitator revolving in the opposite direction to that of the feed wheel. This construction prevents bunching the seeds and thus assures uniform seed placement. Hoppers are easily removed for dumping or changing plates, and only a few moments are required to install the corn cut-off and corn plates in place of cotton plates and agitator. Plates are available for a wide variety of seeds.

The planters are adjustable for planting in row spacings from 36 to 42 inches apart. The front runner frame is an individual unit connected to the main frame by a cushion spring arrangement which permits the runner openers to follow the surface of the ground and thus assure a uniform depth of planting.

Specifications

No.	Description	Net Weight (Approx.)*
20	Checkrow Planter.....	569 lb.
20-D	Drill Planter.....	429 lb.

*With runner openers.

No. 20 Checkrow, No. 20-D Drill Planter

The No. 20 is the checkrow planter, which can be used either for checkrow or for drill. The No. 20-D is exclusively a drill planter. Addition of a hill-drill attachment converts either of the planters for use as a hill-drop planter to deposit 1, 2 or 3 seeds, depending on the size of the cells in the plate.

Regular Equipment

Reverse-feed hoppers. Runner openers, or disk openers (with shovel coverers), as ordered. Disk markers. Horse tongue. 30-in. open or closed-center wheels, as ordered. 80 rods of wire and reel supplied with No. 20.

Special Equipment

Single seed or flat drop hoppers in lieu of reverse feed hoppers. No. 14 corn and pea attachment. No. 15 hill drill attachment for No. 20 planter. No. 16 hill drill attachment for No. 20-D planter. Nos. 4 and 5 peanut attachment for reverse feed hoppers. Nos. 7 and 8 peanut attachments for single seed hoppers.

No. 20 fertilizer attachment for No. 20 planter. No. 21 fertilizer attachment for No. 20-D planter.



INTERNATIONAL HARVESTER



Nos. 20 and 20-D Cotton and Corn Planters

(Continued)



Illust. 1 — The No. 20 is the checkrow planter designed for either checkrow or drill planting.

Special Equipment (Continued)

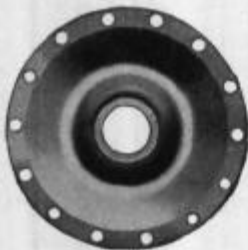
POW-454 open-center wheels in 10-in. width. Shovel covers for runner openers. Two-horse hitch consisting of eveners and neckyoke. POTH-204 tractor hitch with levers for operating the planter from the tractor seat. POTH-26 trailing tractor hitch for one planter. POTH-37 trailing tractor hitch for two planters.

Peanut Attachments

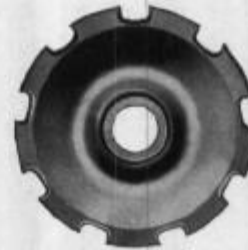
The peanut attachments available for these planters handle either whole or hulled peanuts without cracking them. There is no brush nor spring-controlled cut-off, and there are no projections that would in any way tend to retard or crack the seed.



Illust. 2 — The No. 5 peanut attachment on cotton hopper bottom, showing whole peanut plate.



Illust. 3 — The 14-cell plate for shelled peanuts.



Illust. 4 — The 9-cell plate for whole peanuts.



CULTIVATORS

Section 7

FARMALL CULTIVATORS

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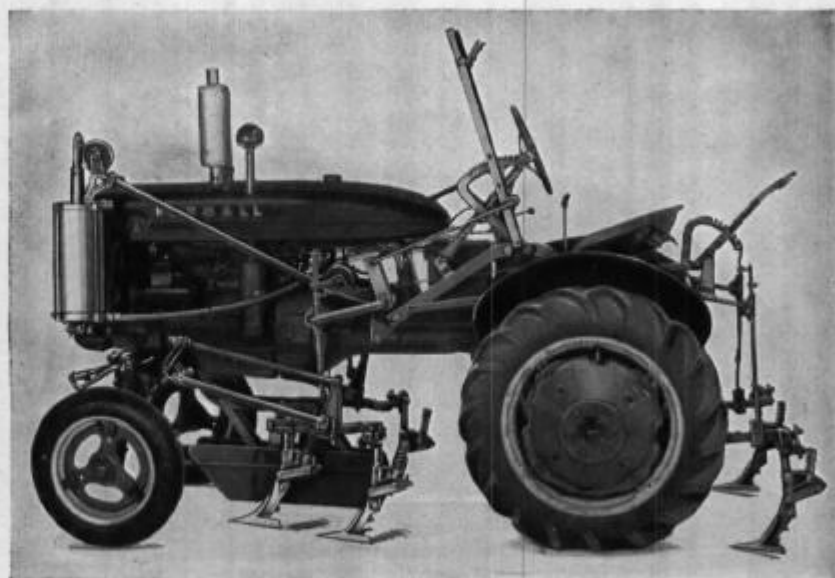
A-138 and AV-138 One-Row Cultivators

(For Farmalls A and AV)

- High-speed cultivation.
- Fast, accurate dodging.
- Culti-Vision—unobstructed view of the row.
- Parallel link construction.
- Special equipment for every requirement.

The A-138 for the Farmall-A is a one-row cultivator designed for high-speed cultivation—speeds up to $4\frac{1}{2}$ m.p.h.—of corn, cotton, potatoes, and other crops planted in rows spaced from 36 to 44 inches apart.

The AV-138, for the high-clearance Farmall-AV, is a one-row cultivator designed for tall-growing crops planted in rows spaced 36 to 44 inches apart. The only difference between the two cultivators is in the gang mounting supports which attach to the tractor frame.



Illust. 1 — The A-138 power-lift cultivator on tractor equipped with power-lift attachment. This combination gives the maximum in operating ease and comfort.

Fast, Accurate Dodging—The rigid construction of the cultivators, plus the design feature which places the front shovels close to the axis of the front wheels, gives instant response as the tractor is steered. Adjustments are provided for correction of wear to keep gangs rigid by taking up slack. Slack affects accurate high-speed cultivation.

Shovels or Sweeps Really Dig In—The two-rod parallel-link construction which connects the gangs to the cultivator keeps the tool bars level at any position. Once properly set, all front ground tools are always at the same angle regardless of the depth at which they work. This feature plus the strong construction assures cultivators that take to the ground fast, and stay "put" in the hardest of soils.

Culti-Vision—The offset seat feature of the Farmalls A and AV plus the clean-cut lines of the forward-mounted cultivator give an unobstructed view of the row. This enables the operator to do

close, accurate work, even in young crops, with the minimum fatigue at high speeds.

High-Speed Sweeps—These are sweeps designed to work the soil and kill the weeds at speeds up to $4\frac{1}{2}$ m.p.h. without throwing dirt. The soil glides over them like water off a duck's back.

Hand or Power Lift—The cultivators are available in either hand or power lift. With Farmall Lift-All and a power-lift cultivator the operator has a combination that can be operated day in and day out with minimum effort and fatigue.

Beet, Beans and Vegetables—The cultivators can be converted into an excellent beet, bean or similar vegetable cultivator by replacing the regular gangs with parallel tool bars and vegetable type ground tools. This makes it possible to cultivate the most delicate crops. This equipment makes it possible to work a maximum of 4 rows spaced 24 inches apart and 6 rows spaced 12 to 14 inches apart and many other row-spacing combinations.

Specifications

Cult. No.	Tool Equip. No.	Type of Lift	Shield No.	Front Section	Rear Section	Net Weight (Approx.)—Lb.	
						Hand Lift	Power Lift
A-138	1	Hand	68	4 spring trips with 2 10-in. half sweeps and 2 (6106 B) 8-in. sweeps.....	2 spring trips with (6107 B) 10-in. sweeps	383	425
A-138	2	Hand	68	4 spring trips with 2 10-in. half sweeps and 2 (6106 B) 8-in. sweeps.....	2 spring trips with (6107 B) 10-in. sweeps on long tool bars and independent lifting lever.....	398	436
A-138	3	Hand	68	4 spring trips with 2 10-in. half sweeps and 2 (6106 B) 8-in. sweeps.....	4 spring trips with (6106 B) 8-in. sweeps and independent lifting lever.....	430	468
AV-138	5	Hand	68	6 spring trips with (25702 B) double-point shovels.....	2 spring trips with (6107 B) 10-in. sweeps	412	454
A-138	51	Hand	77	4 spring teeth with (25702 B) double-point shovels.....	2 spring teeth with (25702 B) double-point shovels.....	368	410
A-138	53	Hand	77	6 spring teeth with (25702 B) double-point shovels.....	2 spring teeth with (25702 B) double-point shovels.....	402	444
A-138	71	Hand	68	4 spring trips with 2 10-in. half sweeps and 2 (6106 B) 8-in. sweeps.....	2 spring teeth with (25702 B) double-point shovels.....	385	427

A-138 and AV-138 One-Row Cultivators

(Continued)

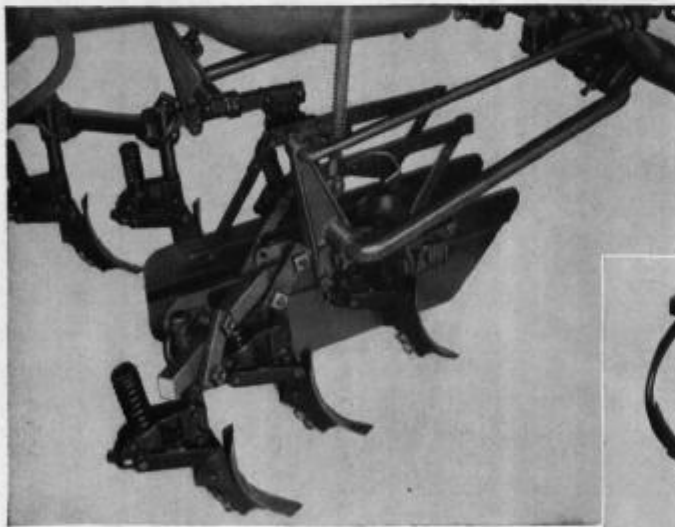
Regular Equipment

Choice of ground tools as shown in Specifications. No. 78 jockey arch is regular for AV-138.

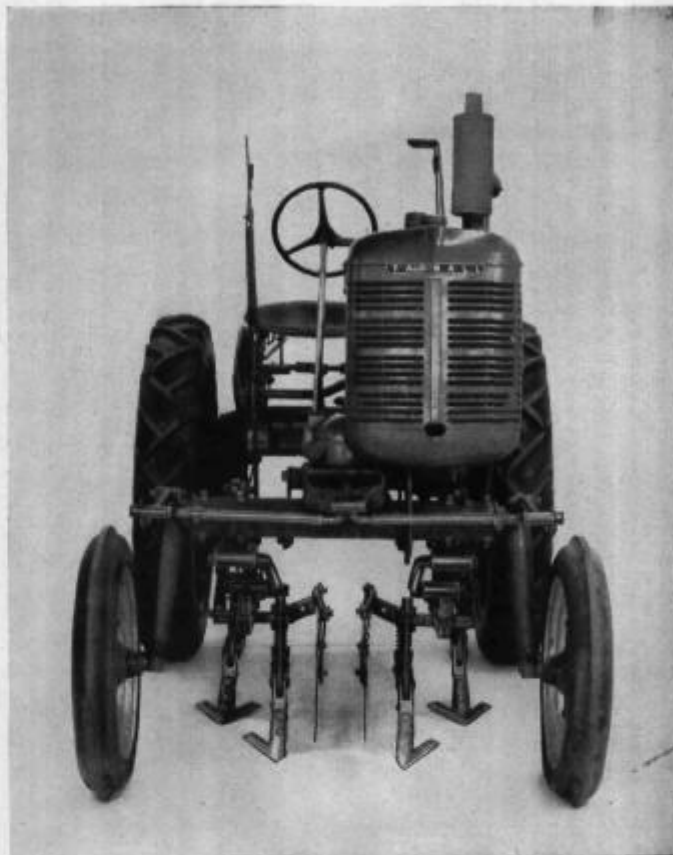
Special Equipment

No. 21 disk hiller. No. 22 disk hiller. No. 6 rotary weeder. No. 5 rotary weeder shields. No. 7 moldboard hiller. No. 78 jockey arch for rear section of A-138. Tobacco hiller attachment for the AV-138. No. 23 bean harvester for non-irrigated territory. No. 26 bean harvester for irrigated territory. Packages of parts to convert A-138 to work 26 to 28-in. rows and for AV-138 to work 28 to 30-in. rows.

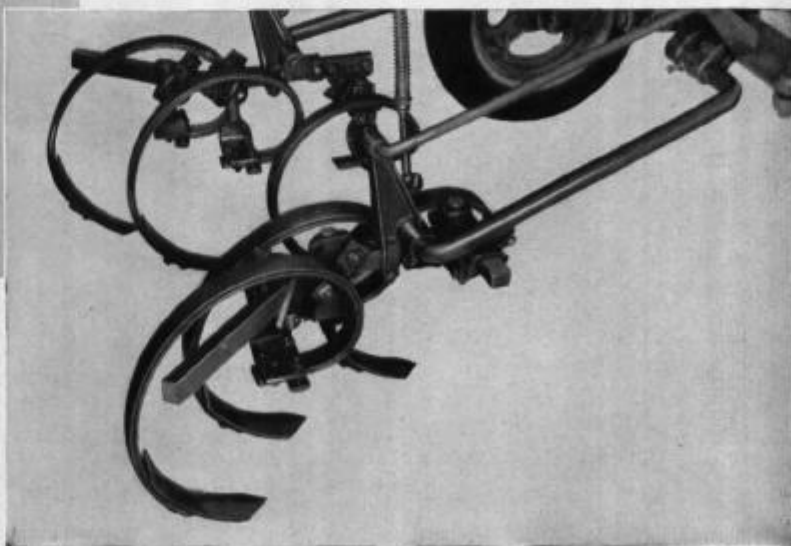
Beet, Bean and Vegetable Equipment: No. 8 front parallel tool bars with either 101-in. or 129-in. rear bar as ordered. Type "R" rear section (hand or power lift). No. 72 shield. No. 80 shield.



Illust. 2 — No. 5 tooling equipment with 6 spring trips with $2\frac{1}{2} \times 11$ -in. double-point shovels on the front section. Rear section (not shown) consisting of 2 spring trips and 10-in. sweeps is the same as the rear section for the regular No. 1 tooling equipment.



Illust. 1 — The AV-138 Farmall cultivator (above) is an ideal combination for working crops where more clearance is required. Note the position of the seat and the clear unobstructed view of the sweeps nearest the row.



Illust. 3 — No. 53 tooling equipment with 6 spring teeth and $2\frac{1}{2} \times 11$ -in. double-pointed shovels. Rear section (not shown) is composed of 2 spring teeth and $2\frac{1}{2} \times 11$ -in. double-point shovels.



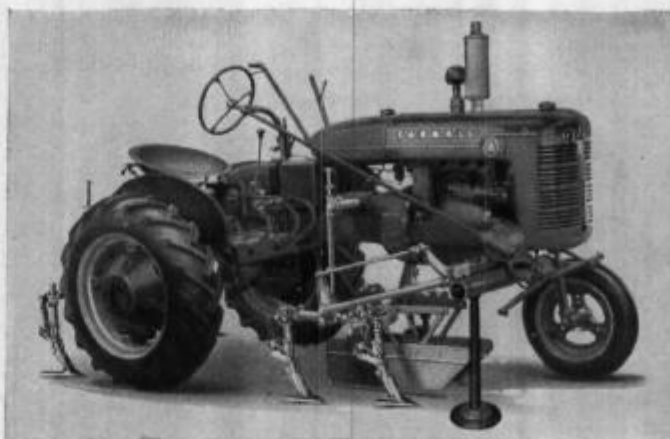
A-136 One-Row Cultivator

(For Farmall-A)

The A-136 is the same cultivator as the A-138 except it is designed to work row-crops grown on beds or in furrows. It is equipped with round pipe-type tool attaching bars whereas the A-138 has solid rectangular tool bars. The barrel-type standard attaching clamps permit tilting the standards to work the sides of beds or furrows. For all other features refer to the A-138.

The cultivator is available with hand lift or power lift and a choice of ground tool combinations as shown in Specifications below.

As is true for the A-138, this cultivator may be converted into an excellent beet, bean or vegetable cultivator by replacing the gangs with long parallel tool bars and vegetable ground tools. The tools may be arranged for 1 to 6-row cultivation, the maximum being 6 rows at 12 to 14-in. spacing or 4 rows at 24 inches. Refer to Special Equipment for equipment available.



Illust. 1 — The A-136 cultivator has a round tool bar. Barrel clamps used with the tool bar permit tilting the tools for work on the sides of beds or trenches. (Tractor front wheel removed to afford complete view of cultivator.)

Regular Equipment

No. 68 shields and tool equipment as listed in Specifications.

Special Equipment

No. 78 rear jockey arch. No. 6 rotary weeder. Peanut digger. No. 7 moldboard hillers. No. 21 and 22 disk hillers. Package of parts for converting cultivators to work 24, 26 or 28-in. rows.

Beet, Bean and Vegetable Equipment: No. 8 tool bar attachment with either 101 or 129-in. long bars. Type "R" rear section single tool bar and attaching parts—(hand or power lift). No. 72 or No. 80 shields for No. 8 tool bar. Choice of vegetable tools as listed on pages 240 to 242.



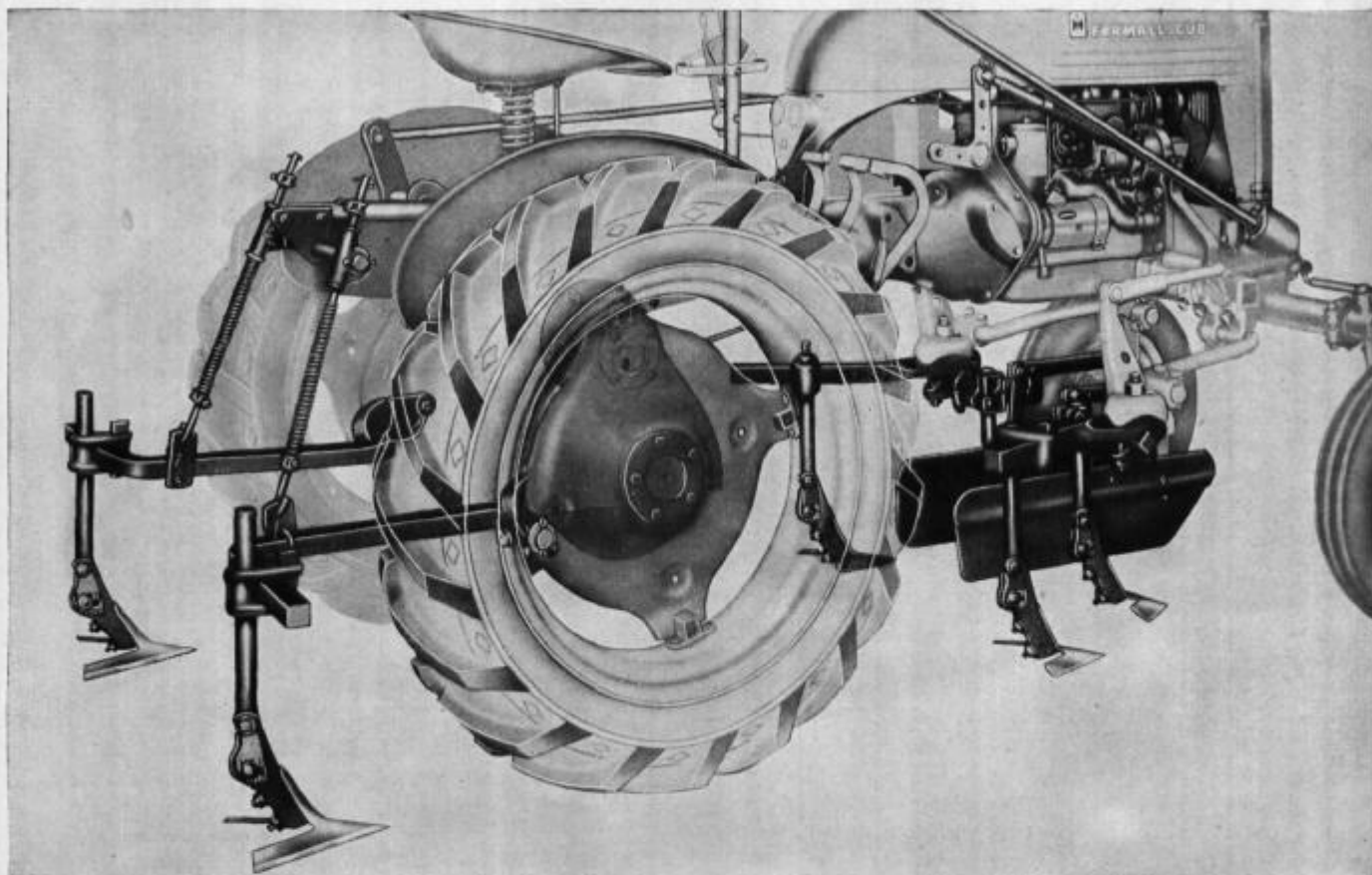
Illust. 2 — No. 68 shield (parallel floating type).

Specifications

Cult. No.	Tool Equip. No.	Type of Lift	Row Spacing (Inches)	Front Section	Rear Section	Net Weight (Approx.) Lb.
A-136	1	Hand	36-44	4 spring trips with (6106 B) 8-in. sweeps...	2 spring trips with (6107 B) 10-in. sweeps	377
A-136	1	Power	36-44	4 spring trips with (6106 B) 8-in. sweeps...	2 spring trips with (6107 B) 10-in. sweeps	419
A-136	2	Hand	36-44	4 spring trips with (6106 B) 8-in. sweeps...	2 spring trips with (6107 B) 10-in. sweeps on long tool bar and independent lifting lever.....	392
A-136	2	Power	36-44	4 spring trips with (6106 B) 8 in. sweeps...	2 spring trips with (6107 B) 10 in. sweeps on long tool bar	430
A-136	3	Hand	36-44	4 spring trips with (6106 B) 8 in. sweeps...	4 spring trips with (6106 B) 8 in. sweeps and independent lifting lever	424
A-136	3	Power	36-44	4 spring trips with (6106 B) 8 in. sweeps...	4 spring trips with (6106 B) 8 in. sweeps	462



Farmall Cub
Cub-144 Cotton and Corn Cultivator
One-Row, Forward-Mounted



Illust. 1 — The Farmall Cub-144 is a simple, one-row cultivator which will cultivate corn, cotton, and any other row crop planted in 36 to 56-in spacings.

- Simplicity with strength.
- Culti-Vision — unobstructed view of row and work being done.
- Wide selection of ground tools.
- Farmall Touch-Control or manual control giving accurate depth control.
- Quick-change without altering the adjustment of the ground tools.

Regular Equipment

No. 90 parallel floating shields (except with No. 53 equipment). Square tool bars, $1\frac{3}{8}$ in. Choice of seven combinations of tool equipment.

Special Equipment

Fertilizer unit, Cub-53-C, for side dressing. Deep fertilizer applicator, for Cub-53-C (consists of a standard complete with diamond point and spout with parts for attaching to cultivator tool bar). Jockey arch, No. 83 for rear section. Potato hiller, Connecticut type. Shield, No. 91, for use with No. 53 equipment. Shield, No. 92 Hi-Speed covered type, in place of regular. Weeder mulcher, No. 6, 10 ft., 3 rank gang with 51 teeth spaced approx. 2 in. apart.

Spring Tooth Units

No. 97 (triple tooth) consists of two units of three spring teeth each with $2\frac{1}{2} \times 11$ in. shovels. This may be obtained as extra equipment, in place of No. 1 or No. 5 tooling equipment on rear section, or in place of No. 34 or No. 35 tooling equipment. Spring teeth are regular on the rear section of No. 53 Tooling equipment.

No. 98 (single tooth) consists of two single spring teeth with $2\frac{1}{2} \times 11$ in. shovels. Supplied as extra equipment, in place of regular spring or friction-trip standards with sweeps and shovels on rear sections.



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Cub-144 Cotton and Corn Cultivator

(Continued)



The Ideal Cultivator

The Cub-144 one-row cotton and corn cultivator is designed to work as an integral unit with the Farmall Cub tractor, and is capable of cultivating as many as 12 acres per day. It consists of two simple yet sturdy front and two rear ground tool units. Each of the front units or gangs has a bolt with a wedge-faced, self-locking nut which is slipped into the keyhole slot on the Universal Mounting Frame gang head. The rear units have slotted brackets which are quickly attached to the rear tractor mounting pads.

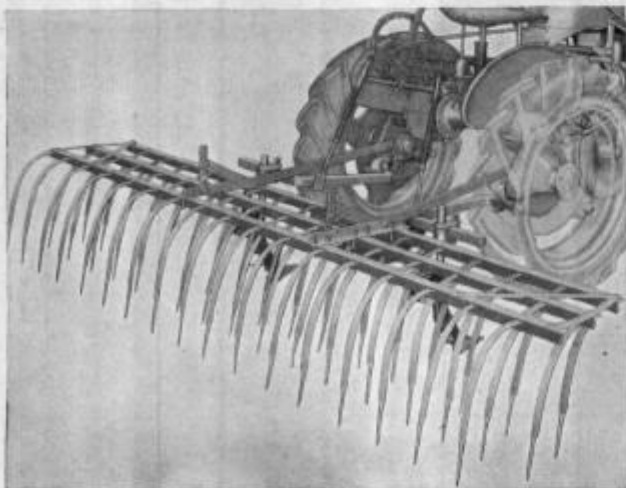
Touch-Control or Manual Control

The Cub-144 cultivator may be raised, lowered, or held by either hydraulic Touch-Control or manual control. With Farmall two-way Touch-Control, a fingertip-touch on the control lever is sufficient to raise, lower, or adjust the cultivating units.

Choice of Ground Tools

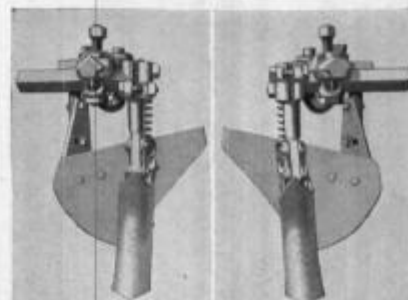
A wide selection of ground tools is available for working every type of soil and crop. Either spring or friction trip standards may be had. Either of these standards will protect the cultivator from damage should a shovel or sweep strike a stone, root, or other obstruction. Upon striking the obstruction, the tool pivots back. The spring trip (slightly higher in cost) returns the shovel to the working position as soon as the pressure is released. Using the friction trip, the tractor operator must dismount, loosen the bolt, push the tool back into position, and tighten the bolt.

In general, the ground tools available for the Cub-144 are similar to the corresponding tools for the A-144 cultivator and are illustrated on the A-144 pages. Note that Nos. 34 and 33 ground tools are the same as No. 1 and No. 3 respectively, except that friction standards are furnished in place of spring trip standards.

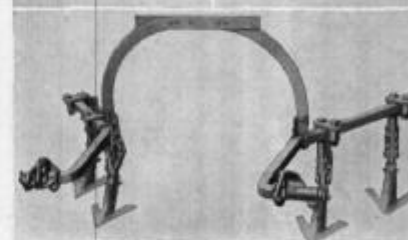


Illust. 1—The No. 6 Weed Mulcher increases the utility of the Cub-144 Cultivator.

Illust. 2—The No. 1 Connecticut Potato Hillers are the ideal tools for moving soil close-up around the potato plants and for covering any weeds that may be growing in the row between the plants.



Illust. 3—The No. 83 Jockey Arch gives added rigidity to the rear section when more than one sweep is used on each tool bar, or when spring-tooth gangs are used.



No. 5 comes with spring trip standards only. No. 53 for the Cub-144 consists of spring-tooth-mounted ground tools, and differs from the A-144 by having triple spring teeth on each rear tool bar.

Parallel floating shields ride the contour of the ground and protect the small plants from being covered during early cultivation. For high-speed cultivation of small crops, a covered type shield is available.

For the Diversified Farm

The Cub-144 one-row, forward-mounted cultivator fills the needs of the diversified farm perfectly. The photographs of ground tool combinations show the entire cultivator which is composed of tool bars for holding the tools in working position. This means that the individual farmer can afford to own a cultivator for every crop and soil condition on his land. Thus, he need no longer take time out from his work to change from one tool combination to another. He can better afford to buy as many cultivators as he needs to carry out his diversified operations. Quick change from one cultivator to another is then only a matter of minutes. No tool adjustments need to be disturbed.

Specifications

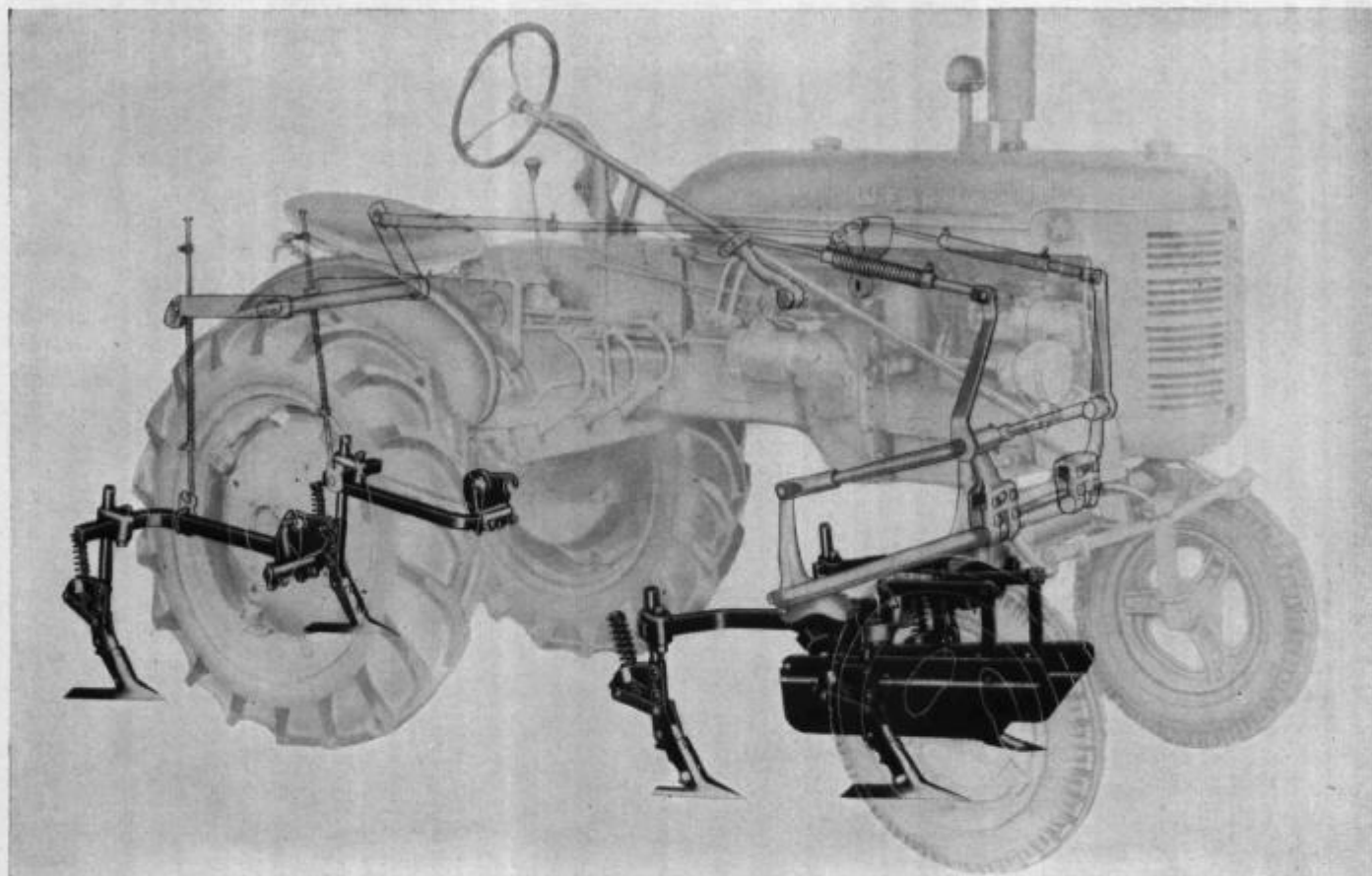
Cultivator No.	UNIVERSAL UNITS REQUIRED		Row Spacing (inches)	Net Weight (Approx.)
	Touch-Control	Manual Control		
Cub-144	No. 511 892 R91 Universal Mounting Frame No. 512 652 R92 Rear Rockshaft	No. 511 892 R91 Universal Mounting Frame No. 511 893 R92 Raising Lever and Rear Rockshaft No. 511 894 R91 Front Rockshaft	36 to 56*	224 lb.

*36 to 44 inches with regular non-adjustable front axle.



Farmall Super-A A-144, AV-144 Cotton and Corn Cultivators

One-Row, Forward-Mounted



Illust. 1 — The A-144 one-row cultivator is forward-mounted on the Farmall Super-A tractor. No. 90 shields are regular equipment. This is a simple, one-row cultivator that can be efficiently operated at high speed even in rows of tiny seedlings. Ground tools for every type of soil and tillage practice are available as ordered.

- Simplicity with strength.
- Accuracy with speed.
- Easy to operate.
- Farmall Touch-Control for effortless raising and lowering.
- Farmall Touch-Control for accurate, instantaneous adjustments.
- Quick-change of implements without changing the original setting and adjustment of the ground tools.

Regular Equipment

A-144 cultivator: No. 1 tool equipment; No. 90 shield.

AV-144 cultivator: No. 3 tool equipment; No. 90 shield; No. 83 jockey arch.

Special Equipment

A-144 cultivator: No. 21 disk hiller (6½-in. offset standard); No. 22 disk hiller (straight standard); No. 97 spring tooth attachment (triple tooth for the rear

section); No. 6 rotary weeder; No. 83 jockey arch for the rear section; No. 91 cultivator shield (for use with Nos. 51 and 53 tool equipment); No. 92 high-speed cultivator shield; No. 5 weeder mulcher attachment; No. 1 Connecticut potato hiller attachment (for use with Nos. 5 and 53 tool equipment); A-53-C fertilizer attachment for side dressing (see page 197-A).

AV-144 cultivator: No. 1 Connecticut potato hiller attachment; No. 7 moldboard hiller attachment; No. 4 weeder mulcher attachment, 7½-ft.; No. 5 weeder mulcher attachment, 10-ft.

Specifications

Cultivator No.	Universal Units Required	No. Rows	Row Spacing (inches)	Net Weight (Approx.)
A-144	Universal Mounting Frame	One	40 to 68	212 lb.
AV-144	Universal Rockshaft	One	48 to 68	286 lb.



INTERNATIONAL HARVESTER



Farmall Super-A A-144, AV-144 Cotton and Corn Cultivators

One-Row, Forward-Mounted (Continued)



A-144 Cultivator

The A-144 is designed to work as an integral unit with the Farmall Super-A tractor. This cultivator will work in row spacings from 40 to 68 inches.

AV-144 Cultivator

The AV-144 is designed to work as an integral unit with the Farmall Super-AV tractor. This cultivator will work in row spacings from 48 to 68 inches. The front tractor wheels are adjustable and may be set at 44-inch tread; however, when using this cultivator it is recommended that the wheels not be set any narrower than 48-inch tread.

Similar Cultivators

In the main, A-144 and AV-144 cultivators are the same. The front and rear sections comprise $1\frac{3}{8}$ -inch square tool bars to which ground-working tools with $1\frac{1}{4}$ -inch standards are attached with single wedge-bolt clamps. Each of the front gangs has a bolt with a wedge-faced, self-locking nut which is slipped into the Universal Mounting Frame gang head. The Universal Mounting Frame is furnished only when ordered.

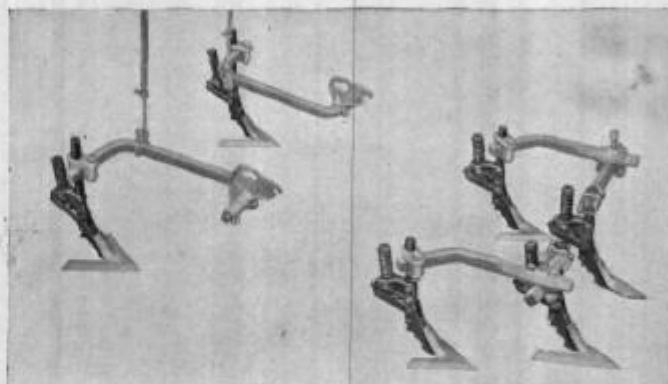
The rear gangs have slotted brackets which are quickly attached to the rear Tractor Mounting Pads. The rear gang lifting rods, with pressure springs, are attached to the Universal Rockshaft which is required to operate the rear section. It consists of a rockshaft, a lift link, and rockshaft bearings. Because of its wide application, the Universal Rockshaft is furnished only when ordered. The Universal (split) Rockshaft which is designed for use with the A-189 one-furrow, two-way plow can be used equally well in place of the Universal (rigid) Rockshaft. If the purchaser contemplates buying the A-189 plow, it is recommended that the split rockshaft be purchased to avoid expenditure for both rockshafts.

Farmall Touch-Control for Effortless Raising, Lowering and Adjusting

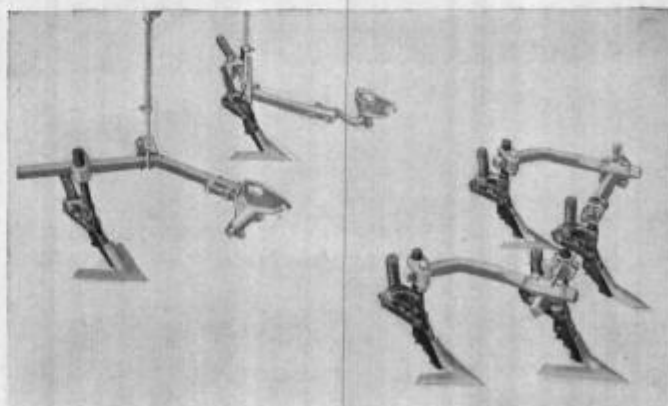
Now, with Farmall Touch-Control, a faster, easier, and better job of cultivating can be done than ever before. The front and rear sections can be controlled independently. This means that headlands can be cut to the minimum. Grassed waterways can be safeguarded. Every foot of tillable soil can be utilized. And, of course, the desired cultivating depth can be set in an instant at the beginning of the row and, with just the flick of a finger, minute adjustments can be made instantly while traveling down the field.

Ground Tools for Every Type of Soil, Crop and Tillage Practice

A wide selection of sweeps and shovels with spring-trip standards or spring teeth is available for every type of soil, crop and tillage practice. Spring-trip standards protect the cultivator from damage when a shovel or sweep strikes a stone, root or other obstruction. Upon striking the obstruction, the spring trip returns the shovel or sweep to the working position as soon as the pressure is released. Spring teeth with shovels attached are especially valuable where the soil is stony



Illust. 1 — No. 1 ground tool combination consists of—spring-trip standards; two 10-inch half-sweeps and two 8-inch full sweeps on the front section; two 10-inch full sweeps on the rear section. The No. 1 tool combination provides high-speed, shallow, yet clean cultivation of 40, 42 and 44-inch rows. Using half-sweeps next to the row, it is possible to work closely to the plants without damaging the roots.



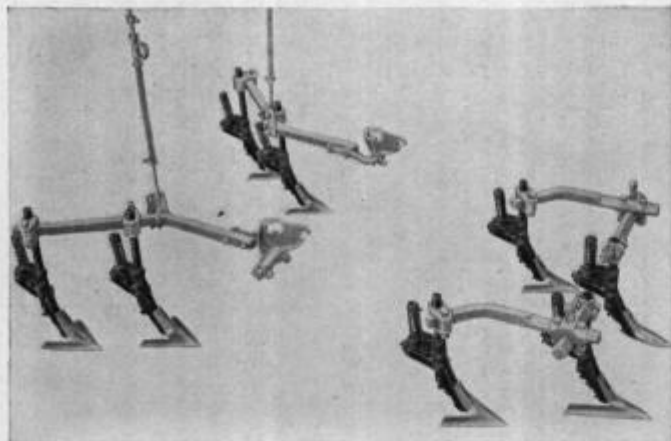
Illust. 2 — No. 2 ground tool combination consists of—spring-trip standards; two 10-inch half-sweeps and two 8-inch full sweeps on the front section; two 10-inch full sweeps on the rear section. The No. 2 ground tool combination has the same function as the No. 1 combination; the only difference is that the No. 2 combination has longer tool bars on the rear section and adjustable gang heads. These features make it possible to adapt the cultivator to 40 to 58-inch row spacings.



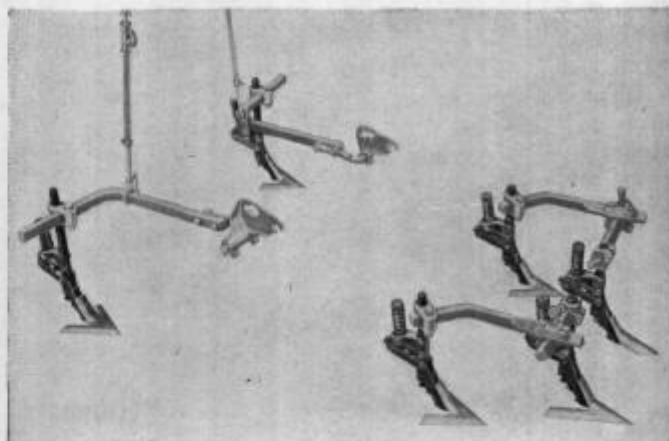
Farmall Super-A

A-144, AV-144 Cotton and Corn Cultivators

One-Row, Forward-Mounted (Continued)



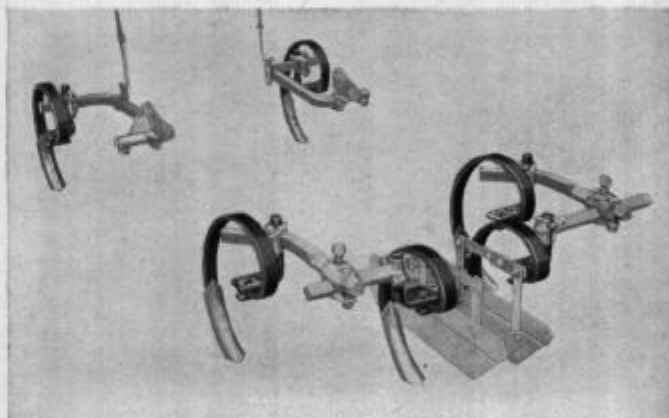
Illust. 3 — No. 3 ground tool combination consists of — spring-trip standards; two 10-inch half-sweeps and two 8-inch full sweeps on the front section; four 8-inch full sweeps on the rear section. The No. 3 ground tool combination has the same function as the No. 1 ground tool combination. The difference is that the rear section has adjustable gang heads and four sweeps on the rear section which permits clean, high speed cultivation of 40 to 68-inch rows.



Illust. 5 — No. 28 ground tool combination consists of — spring-trip standards; two 10-inch half-sweeps and two 8-inch full sweeps on the front section; two 10-inch full sweeps on the rear section. The rear gang beams are of the non-adjustable type. Rows from 40 to 58 inches can be cultivated. The No. 28 ground tool combination permits high-speed, shallow, clean cultivation. Long tool bars on the rear section enable the operator to add additional standards and sweeps if desired.



Illust. 4 — No. 5 ground tool combination consists of — spring-trip standards; six $2\frac{1}{2}$ x 11-inch, double point shovels on the front section; two 10-inch full sweeps on the rear section. The rear gang beams are the non-adjustable type. Rows 40, 42, and 44 inches may be cultivated. The No. 5 ground tool combination is especially well adapted to working deeply and at the same time doing an excellent job of pulverizing the soil. The No. 90 shield, shown here in phantom, is recommended for use with this tool combination.



Illust. 6 — No. 51 ground tool combination. This combination is ideally suited to working in stony and root-infested soils, also soils infested with quack grass, bind weed and morning glories. The front section carries four spring teeth with $2\frac{1}{2}$ x 11-inch double-point shovels. The rear section carries two spring teeth with $2\frac{1}{2}$ x 11-inch shovels. The rear gang beams are of the non-adjustable type. Rows 40, 42, and 44 inches wide may be cultivated. The No. 91 shield, although special equipment, is recommended with this ground tool combination.

or where such weeds as quack grass, bind weed, morning glories, or similar weeds abound.

With today's emphasis on diversified farming, the A or AV-144 cultivator fits right into the farmer's operations. The tool combinations illustrated on this page show the entire cultivator in each case. The cultivator itself is essentially a bar which holds the tools in working position. This being the case, it is

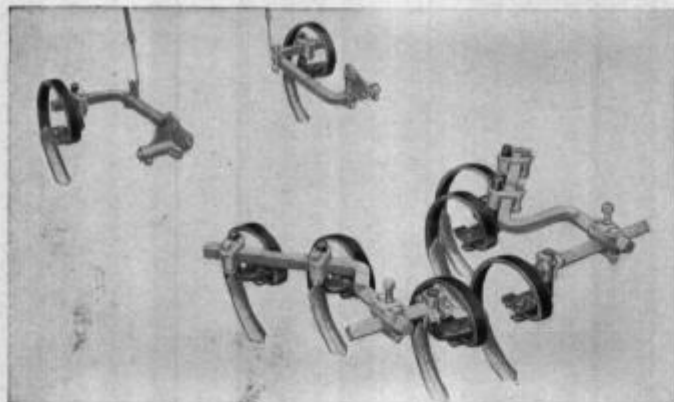
possible for the purchaser to buy not only the tool combinations as listed but also the cultivator. He can have a cultivator for every crop or soil condition. He need no longer take time out from his work to change from one tool combination to another. He can well afford to buy as many cultivators as he needs to carry out his diversified operations. Quick-change from one cultivator to another is then only a matter of minutes.



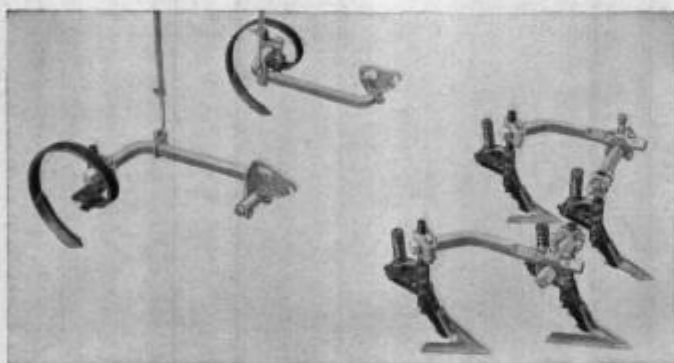
A-144, AV-144 Cotton and Corn Cultivators



One-Row, Forward-Mounted (Continued)



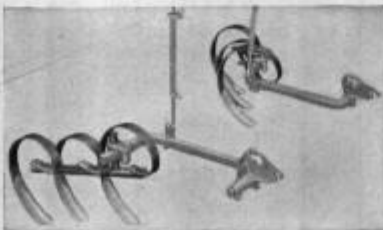
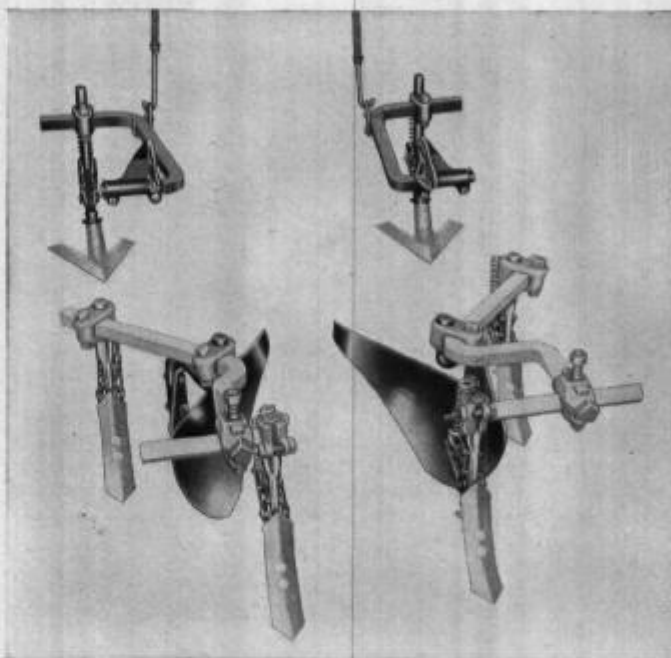
Illust. 1 — No. 53 Ground Tool Combination. The front section carries six spring teeth with $2\frac{1}{2}$ x 11-inch double-point shovels. The rear section carries two spring teeth with $2\frac{1}{2}$ x 11-inch double-point shovels. The rear gangs are non-adjustable. Rows 40, 42, 44 inches wide may be cultivated. This tool combination is similar to the No. 51 combination. The difference is in the tool bars on the front section. They are considerably longer which permits carrying additional spring teeth and shovels for thoroughly working all the soil between the rows.



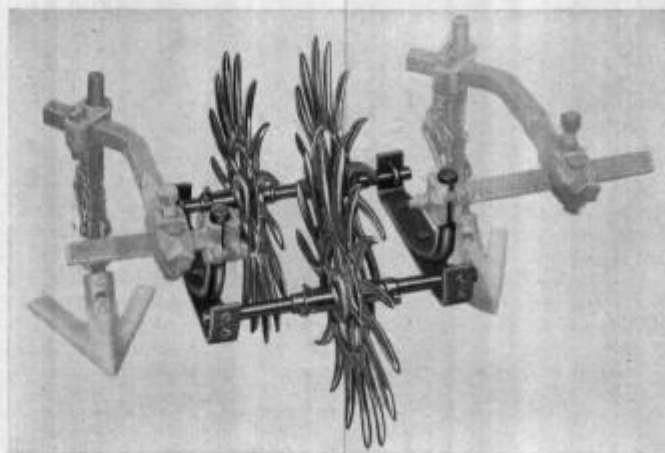
Illust. 2 — No. 71 Ground Tool Combination. The front section is equipped with spring trips, two 10-inch half sweeps and two 8-inch full sweeps. The rear section carries two spring teeth with $2\frac{1}{2}$ x 11-inch shovels. The rear gangs are non-adjustable. Rows 40, 42, and 44 inches may be cultivated. This tool combination is capable of high-speed cultivation with the front section while the rear section does an excellent job of removing wheel tracks. If the soil is in a mucky condition, the spring teeth stir up the soil so that it will absorb the moisture and thus avoid the possibility of the water running off and forming ditches in the wheel tracks.

Illust. 3 — No. 97 Spring-Tooth Rear Section Attachment:

This spring-tooth attachment which consists of two sets of three each spring teeth with $2\frac{1}{2}$ x 11-inch shovels, attaches to the No. 1 ground tool rear section. It is an excellent tool for not only taking out the wheel tracks but it also does a fine job of cultivation the full width of the row. Where planting up and down the hill is unavoidable, this rear section assures that the soil is left in a loose, level condition, thus avoiding the possibility of forming deeper ruts from the wheel track.

Special Attachments
Increase A-144 Utility

Illust. 4 — No. 1 Connecticut potato hiller with tool bar Nos. 512 420 R1 and 512 421 R1. This equipment is ideal for moving soil close up around potato plants and for covering weeds that are growing in the row between the plants. The use of double-point shovels assures cultivating the full width of the row which, in turn, permits maximum water absorption.



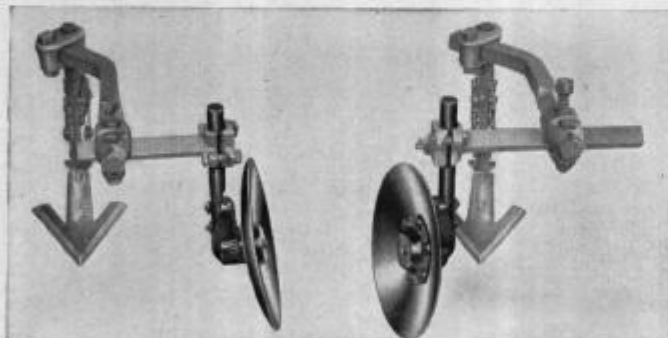
Illust. 5 — No. 6 rotary weeder attachment makes it possible to do within-the-row cultivation in any field . . . on the contour, on the flat, or on beds . . . in straight rows or in listed crops. With this flexible equipment the operator can go into the field as soon as the seed has sprouted and the rows become visible. It is even possible to cultivate blind if the seeded row is faintly discernable. The tines of the rotary weeder wheels cultivate closely in and around the tender young plants and destroy the weed sprouts before they have a chance to put down tap roots.



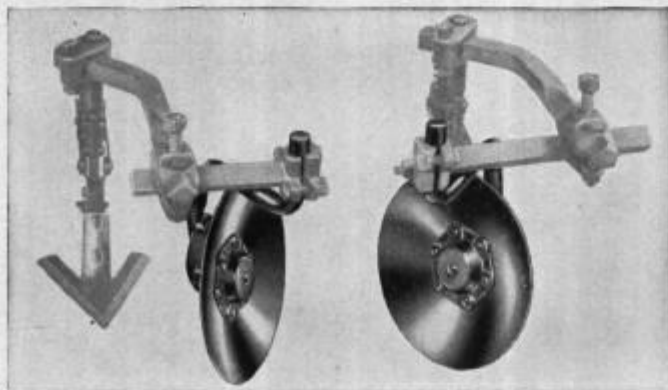
Farmall Super-A
A-144, AV-144 Cotton and Corn Cultivators
 One-Row, Forward-Mounted (Continued)



Illust. 1—No. 5 weeder mulcher attachment is a shallow working cultivator which has three banks of round-pointed, spring-teeth which are staggered to cover every inch of ground over a 10-foot span. These springy, pencil-pointed teeth, without damage to the deeper rooted crops, will get right down into the soil and dig out those pesky little weeds, around the plant and in the row, and bring them to the surface where the sun can finish them. At the same time, the spring teeth break the sun-baked soil crust. The ground is restored to a healthy, growing condition . . . free from weeds.



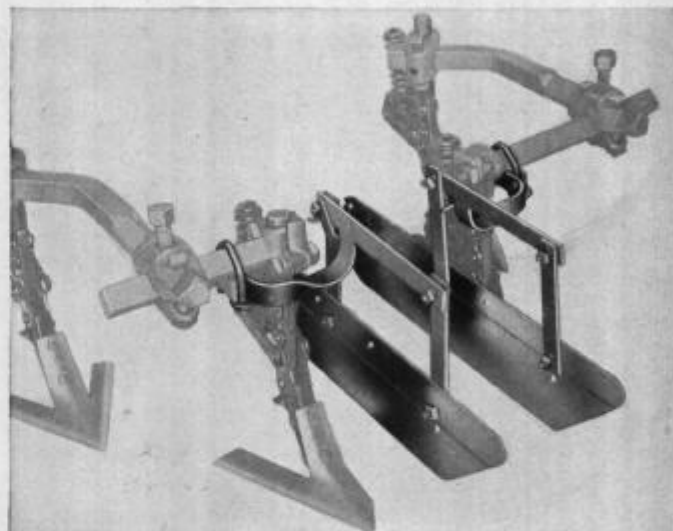
Illust. 2—No. 22 disk hiller set for hilling. This attachment is especially useful when the weeds get a head start early in the season. During early cultivation it may be used for moving dirt from the plants. Used in this manner, the disk angle is set opposite to that shown.



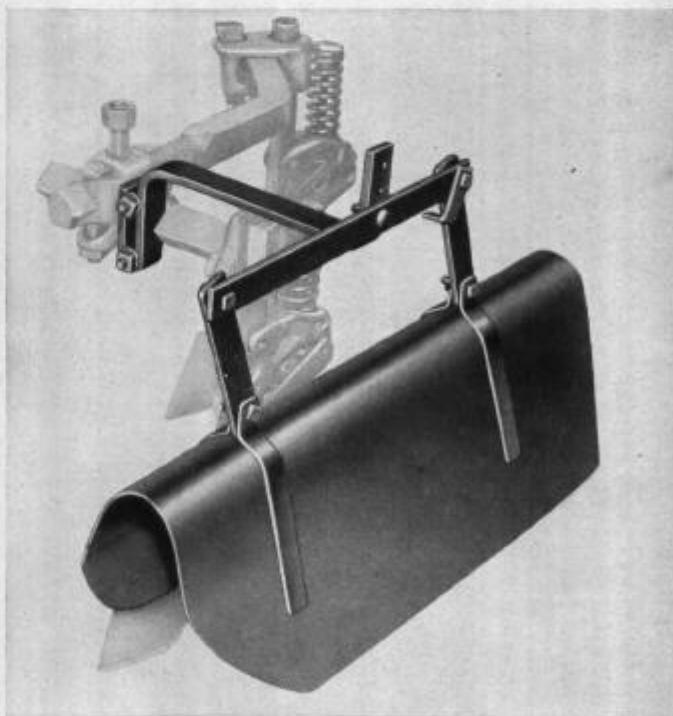
Illust. 3—No. 21 disk hiller attachment performs the same function as the No. 22 disk hiller. The only difference is that the No. 21 has off-set standards.

Parallel Floating Shields

The No. 90 shield rides the surface of the ground and protects small plants from being covered during early cultivation. For high speed cultivation of small crops, the No. 92 high-speed covered-type shield is available as special equipment on the A-144 cultivator.



Illust. 4—No. 90 shield is regular equipment on the A-144 cultivator. A parallel floating shield, it is quickly and easily adjusted without disturbing the shovel or sweep setting.



Illust. 5—No. 92 high-speed covered-type shield is ideal for cultivating at a fast rate of speed in rows of tiny seedlings.



B-221 and BN-221 Two-Row Cultivators

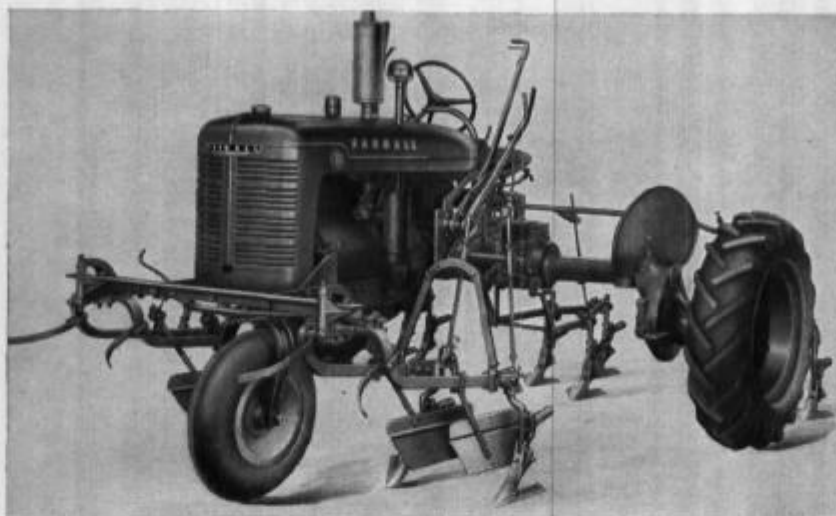
(For Farmalls B and BN)

For Check-Row Crops

The B-221 for the Farmall-B, and the BN-221 for the Farmall-BN, are designed for cross-cultivation of crops planted in checkrows. The B-221 will cultivate rows spaced from 32 to 44 inches apart. The BN-221 is similar to the B-221 except that it will work rows spaced from 28 to 44 inches apart. It is not recommended for tall growing crops in rows above 38 inches apart because the rear axle housing interferes with the crop.

These cultivators are designed so that the front gangs which carry the inside shovels are connected by linkage to the front wheel bolster. This pivots the gangs whenever the tractor is steered.

Both cultivators are supplied regularly with a master lever to lift the entire front section, a lever to adjust the gangs on one side with respect to the gangs on the other side of the tractor, and a lever for raising the rear section. They are also available as power-lift cultivators for use with tractors equipped with pneumatic Lift-All.



Illust. 1 — The B-221 pivot gang, hand-lift cultivator.

Regular Equipment

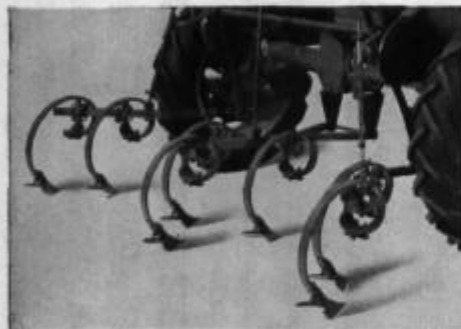
Ground tools as shown in Specifications below. Master lifting lever to lift both sides of front section at once. No. 49 (outside) and No. 75 (inside) shields. No. 73 jockey arches on front section.

Special Equipment

Double lift levers, for raising either side of the front section independently. No. 14 and No. 26 hillers. No. 1 rotary weeder. No. 5 rotary shield. No. 7 mold-board hiller. No. 2 weeder-mulcher. No. 21 and 24 bean harvester for BN-221 only.

Beet, Bean and Vegetable Equipment.

No. 7 tool parallel tool bars with 10 standard clamps for rows spaced from 16 to 24 inches. No. 80 shield. Choice of vegetable tools as shown on pages 240 to 242.



Illust. 2 — B-221 cultivator with spring teeth instead of spring trips.



Illust. 3 — No. 1 rotary weeder attachment for cleaning out weeds in the row.

Specifications

Cult. No.	Tool Equip. No.	Type of Lift	Row Spacing (Inches)	Front Section	Rear Section	Net Weight (Approx.) Lb.
B-221	4	Hand	32-44	4 spring trips with 10-in. half-sweeps and with master lifting lever	7 spring trips with (319) B) 8½-in. sweeps	618
BN-221			28-44		7 spring trips with (319) B) 8½-in. sweeps	648
B-221	4	Power	32-44	4 spring trips with 10-in. half sweeps		
BN-221			28-44			
B-221	72	Hand	32-44	4 spring trips with 10-in. half sweeps and with master lifting lever	7 spring teeth with (319) B) 8½-in. sweeps	635
BN-221			28-44		7 spring teeth with (319) B) 8½-in. sweeps	664
B-221	72	Power	32-44	4 spring trips with 10-in. half sweeps		
BN-221			28-44			



B-238 and BN-238 Two-Row Cultivators

(For Farmalls B and BN)



Illust. 1—B-238 Farmall cultivator shown with hand-lift, and equipped with the No. 10 ground-tool combination.

- High-speed cultivators.
- Fast, accurate dodging.
- Culti-Vision—unobstructed view of the row.
- Parallel-link construction.
- Special equipment for every requirement.

The B-238, for the Farmall-B, is a two-row cultivator designed for high-speed cultivation—speeds up to $4\frac{1}{2}$ m.p.h.—of corn, cotton, potatoes, and other crops planted in rows spaced from 28 to 42 inches apart.

The BN-238, for the narrow-tread Farmall-BN, is a two-row cultivator designed for narrower spaced crops planted in rows spaced 28 to 42 inches apart. It is not recommended for tall growing crops in rows above 38 inches because of the low clearance under the rear axle housings.

Fast, Accurate Dodging—The rigid construction of the cultivators, plus the design feature which places the front shovels close to the axis of the front wheel or wheels, gives instant responance as the tractor is steered. Adjustments are provided for correction of wear to keep gangs rigid by taking up slack. Slack affects accurate high-speed cultivation.

Shovels or Sweeps Really Dig In—The two-rod parallel-link construction which connects the gangs to the supports on the tractor keeps the tool bars level at any position. Once properly set, all front ground tools are always at the same angle regardless of the depth at which they work. This feature plus the

strong construction, assures a cultivator that takes to the ground fast, and stays "put" in the hardest of soils.

Culti-Vision—The offset seat feature of the Farmalls B and BN plus the clean-cut lines of the forward-mounted cultivator give an unobstructed view of the row. This enables the operator to do close, accurate work, even in young crops, with the minimum fatigue at high speeds.

High-Speed Sweeps—These are sweeps designed to work the soil and kill the weeds at speeds up to $4\frac{1}{2}$ m.p.h. without throwing dirt. The soil glides over them like water off a duck's back. Enclosed shields, known as lister type, are available to make high speed cultivation of small plants possible.

Hand or Power Lift—The cultivators are available in either hand or power lift. With Farmall Lift-All and a power-lift cultivator the operator has a combination that can be operated day in and day out with minimum effort and fatigue. The hand lift cultivators can be supplied either with a master lever for raising or lowering both front gangs at the same time, plus a lever for adjusting one gang in relation to the other or double levers for independent control of each gang.

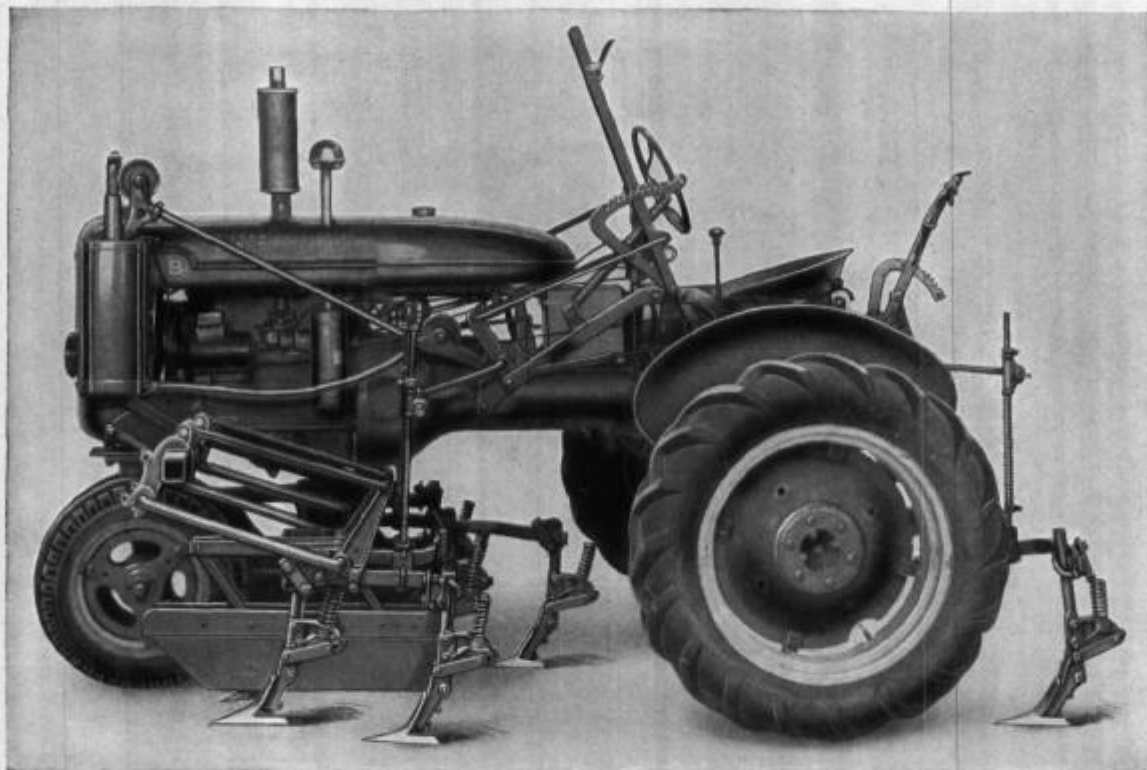
Specifications

Cult. No.	Tool Equip. No.	Row Spacing (Inches)	Front Section	Rear Section	Net Weight (Approx.)—Lb.	
					Hand Lift	Power Lift
B-238	10	32-42	8 spring trips with 4 10-in. half sweeps and 4 (6106 B) 8-in. sweeps	3 spring trips with (6106 B) 8-in. sweeps	651	692
BN-238	11	28-42	8 spring trips with 4 10-in. half sweeps and 4 (6106 B) 8-in. sweeps	7 spring trips with (6106 B) 8-in. sweeps	764	793
B-238	12	32-42	9 spring trips with 4 10-in. half sweeps, 4 (6106 B) 8-in. sweeps and 1 (6107 B) 10-in. sweep	2 spring trips with (6106 B) 8-in. sweeps	619	663
BN-238	24	28-42	8 spring trips with 4 10-in. half sweeps and 4 (6106 B) 8-in. sweeps	3 spring trips with (6106 B) 8-in. sweeps	672	672
B-238	54	32-42	8 spring teeth with (25332 B) 2 x 8-in. double-point shovels	3 spring teeth with (25332 B) 2 x 8-in. double-point shovels	614	656
BN-238		28-42				



B-238 and BN-238 Two-Row Cultivators

(Continued)



Illust. 1 — The B-238 Farmall cultivator with power lift is equipped with the No. 12 ground tool combination.

Beets, Beans and Vegetables—The cultivators can be converted into an excellent beet, bean or similar vegetable cultivators, by replacing the regular gangs with parallel tool bars and vegetable type ground tools. This makes it possible to cultivate the most delicate crops. This equipment makes it possible to work a maximum of 4 rows spaced 22 inches apart and 6 rows spaced 12 to 14 inches apart and many other row-spaced combinations.

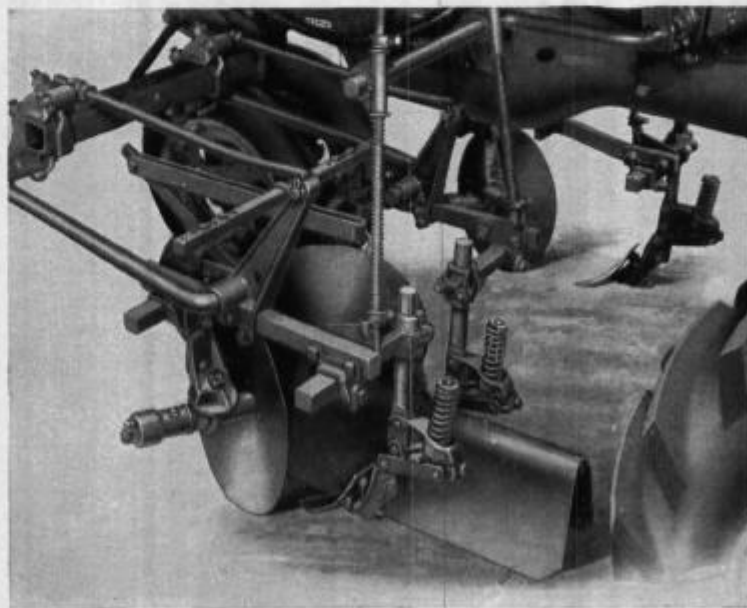
Regular Equipment

Master lifting lever. No. 68 shields for Nos. 10, 11, and 12 tool equipment.

Special Equipment

Double lifting levers. No. 76 shields for No. 54 tool equipment. No. 81 shield for No. 24 tool equipment. No. 21 and 26 disk hillers. No. 90 and 91 spring-tooth attachment. No. 7 mold-board hiller. No. 5 rotary shield. No. 1 rotary weeder. Tobacco hoe. No. 32 bean harvester. No. 83 and 84 lister type parallel-action shields for high speed cultivation of small crops.

Beet, Bean and Vegetable Equipment: No. 7 tool bar attachment. No. 80 shields. Choice of vegetable tools are listed on pages 240 to 242.



Illust. 2 — Lister cultivator attachment with No. 81 shields, for use with No. 24 tool equipment. The model shown is set for first cultivation.



INTERNATIONAL HARVESTER



B-236 Two-Row Cultivator

(For Farmall-B)



Illust. 1 — The B-236 hand lift Farmall cultivator equipped with No. 9 ground tool equipment.

The B-236 is the same cultivator as the B-238 except that it is designed to work row-crops grown on beds or in furrows. It is equipped with round pipe-type tool attaching bars whereas the B-238 has solid rectangular tool bars. The barrel-type standard attaching clamps permit tilting of the standards to work the sides of beds or furrows. For all other features refer to the B-238.

The cultivator is available with double-hand lift or power lift and a choice of ground tool combinations as shown in the Specifications below.

As is true for the B-238, this cultivator may be converted into an excellent beet, bean or vegetable cultivator by replacing the gangs with long parallel tool bars and vegetable ground tools. The tools may be arranged for 1 to 6-row cultivation, the maximum being 6 rows at 12 to 14-inch spacing or 4 rows at 24 inches. Refer to Special Equipment for equipment available.

Regular Equipment

Tool equipment as listed in Specifications below. Double lifting levers. No. 68 shields.

Special Equipment

Master lifting lever for raising both sides of the cultivator at the same time. No. 90 spring-tooth attachment. No. 1 rotary weeder. No. 7 moldboard hiller. No. 21 disk hiller. No. 5 rotary shield. Frame and rear gang beam for converting cultivator to work 48-in. rows.

Beet, Bean and Vegetable Equipment: No. 7 tool bar attachment. No. 80 shields for No. 7 tool bar. Choice of vegetable tools as listed on pages 240 to 242.

Specifications

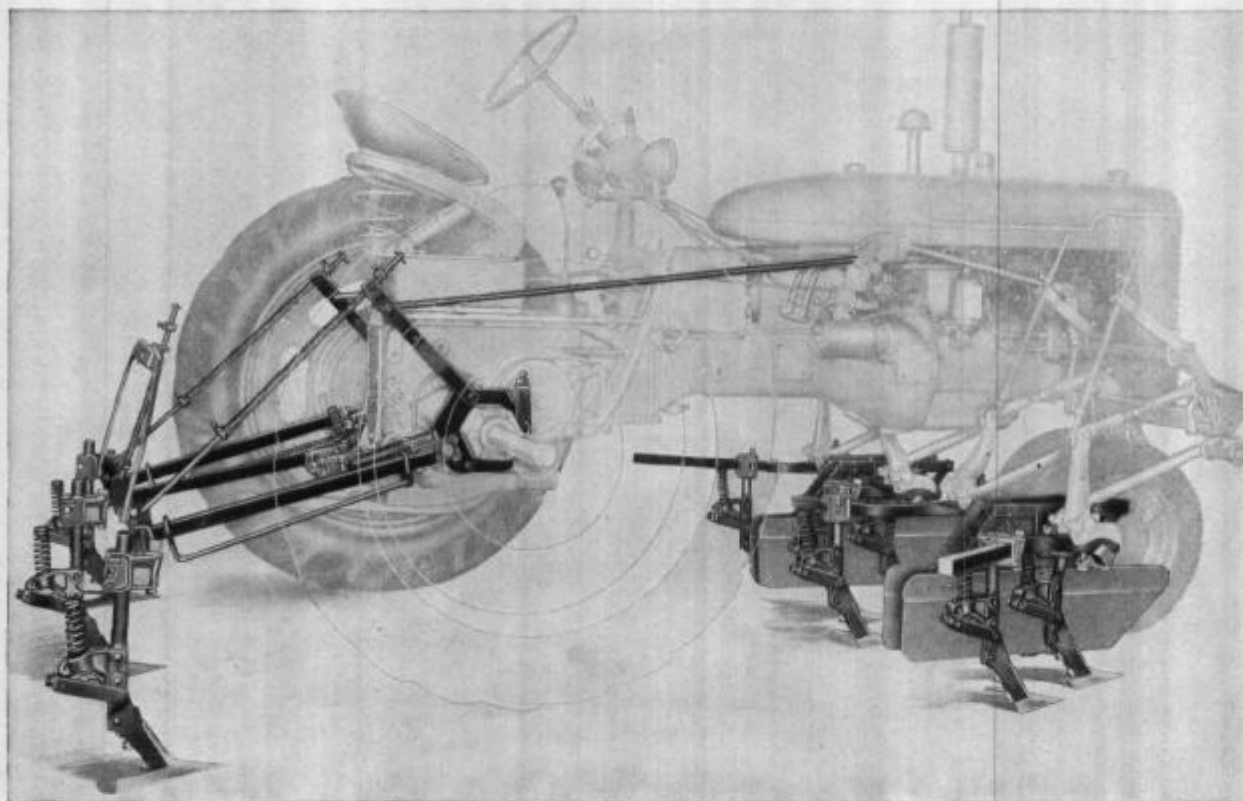
Cult. No.	Tool Equip. No.	Type of Lift	Row Spacing (Inches)	Front Section	Rear Section	Net Weight (Approx.)
B-236	9	Hand	32-42	8 spring trips with (6106 B) 8-in. sweeps and double lifting levers for raising either side independently.....	2 spring trips with (6106 B) 8-in. sweeps....	630 lb.
B-236	9	Power	32-42	8 spring trips with (6106 B) 8-in. sweeps....	2 spring trips with (6106 B) 8-in. sweeps....	672 lb.
B-236	10	Hand	32-42	8 spring trips with (6106 B) 8-in. sweeps and double lifting levers for raising either side independently.....	3 spring trips with (6106 B) 8-in. sweeps....	682 lb.
B-236	10	Power	32-42	8 spring trips with (6106 B) 8-in. sweeps....	3 spring trips with (6106 B) 8-in. sweeps....	710 lb.
B-236	11	Hand	32-42	8 spring trips with (6106 B) 8-in. sweeps and double lifting levers for raising either side independently.....	7 spring trips with (6106 B) 8-in. sweeps....	795 lb.
B-236	11	Power	32-42	8 spring trips with (6106 B) 8-in. sweeps and double lifting levers for raising either side independently.....	7 spring trips with (6106 B) 8-in. sweeps....	822 lb.



Farmall C

C-244 Cotton and Corn Cultivator

Two-Row, Forward-Mounted



Illust. 1 — C-244 cotton and corn cultivator equipped with No. 10 regular tool equipment and with rear rocker arm lift for the rear gang.

- High-speed cultivation.
- Forward mounted — full view of work being done.
- Gangs quickly attached and detached without disturbing sweep adjustments.
- Touch-Control raises and lowers gangs and regulates operating depth.
- Rear section works the wheel tracks.
- Wide variety of tooling equipment for rows spaced 28 to 42 inches apart.

The C-244 is a two-row cultivator designed for fast cultivation of corn, cotton, and other row-crops spaced 34 to 42 inches apart. Special tooling equipment is available for cultivating narrow-spaced rows (down to 28 inches).

The cultivator consists of four front gang units quick-change-attached to the Universal Mounting Frame and a rear section quick-change-attached to the hexagon-shaped rear axle housing. The rear section works the rear wheel tracks and is available with two different lift mechanisms . . . one for use in connection with the Universal Rockshaft and one comprising a rear rocker arm bundle of parts for use when the tractor is **not** equipped with the Universal Rockshaft.

Regular Equipment

Front and rear sections with No. 10 tool equipment.

Special Equipment

Pressure rod bundle (when rear section is to be controlled by Universal Rockshaft). Rear rocker arm bundle for rear section (when Universal Rockshaft is **not** used). No. 13 tool equipment. Spring trip attachment to convert front section No. 10 tool equipment (8-shovel) to No. 13 tool equipment (10-shovel). No. 36 (narrow-row) tool equipment. No. 56 (spring-tooth) tool equipment. Weeder-mulcher attachment. Rotary weeder. Disk hillers. No. 92 Hi-Speed (covered type) shield. No. 95 shield (for use with No. 56 spring-tooth equipment). Fertilizer attachment for side dressing.

Specifications

Cultivator	Tooling Equipment	Row Spacing	Universal Units Required		Net Weight (Approx.)
			Mounting Frame	Rear Rockshaft	
C-244 Two-row	No. 10 (regular)	34 to 42-in.	Yes	* Optional	† 505 lb.
C-244 Two-row	No. 13 (special)	34 to 42-in.	Yes	* Optional	.....
C-244 Two-row	No. 36 (special)	28 to 32-in.	Yes	* Optional	.....
C-244 Two-row	No. 56 (special)	38 to 42-in.	Yes	* Optional	.....

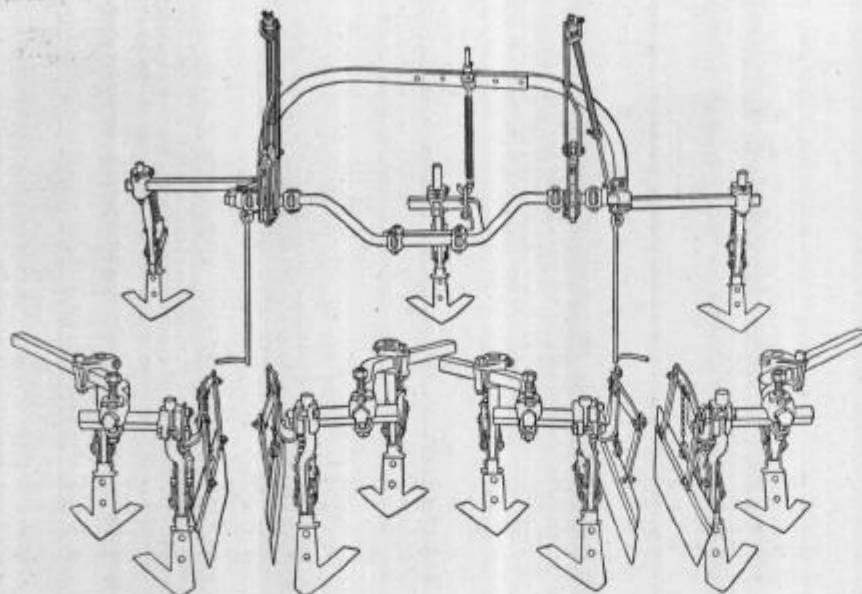
* Order Pressure Rod Bundle (513 666 R91) When Universal Rockshaft is used.
 Order Rear Rocker Arm Bundle (513 236 R91) When Universal Rockshaft is **not** used.
 † Add 7 lb. for pressure rod bundle. Add 28 lb. for rocker arm bundle.



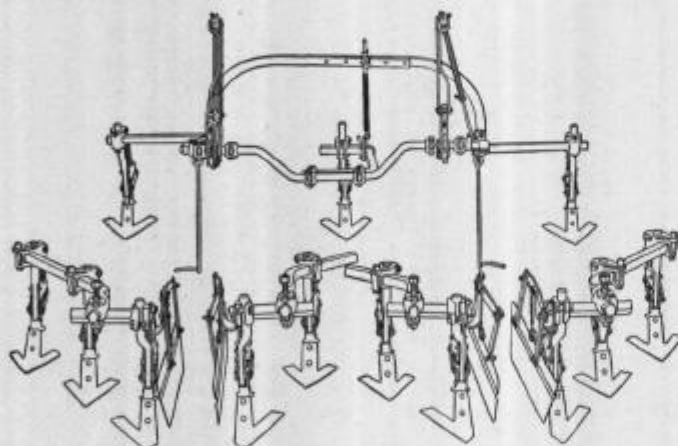
Farmall C

C-244 Cotton and Corn Cultivator

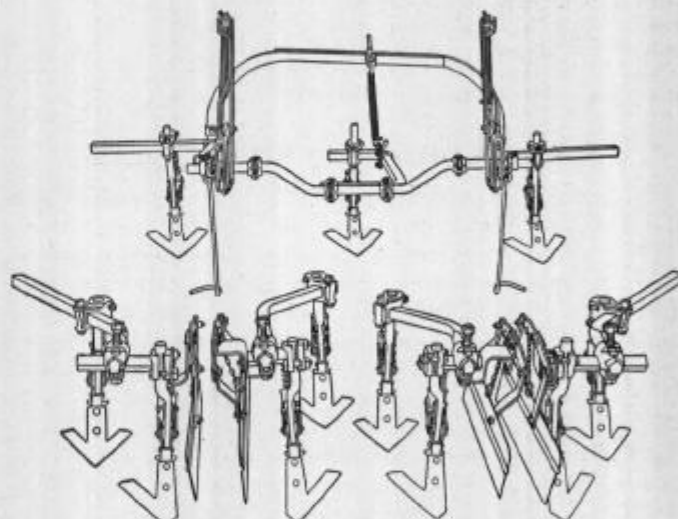
Tool Equipment



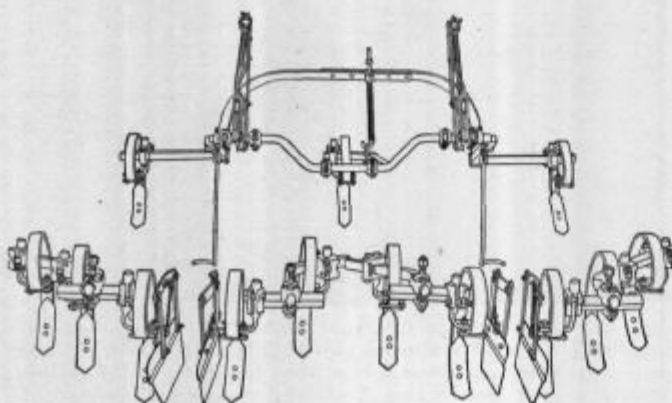
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Illust. 1 — This shows the cultivator front and rear gangs equipped with No. 10 (regular) tool equipment for rows spaced 34 to 42 inches apart. Tool equipment for the front gangs consists of four 8-inch full sweeps (6 106 B) and two right-hand and two left-hand 10-inch half sweeps (511 538 R1 and 511 539 R1) with No. 16 style spring trips and two No. 87 cultivator shields. The rear section is equipped with three 10-inch sweeps (6 107 B) with No. 16 style spring trips and No. 65 jockey arch. Any of the sweeps or shovels listed on page 238 may be had in place of the sweeps specified. This is also true if the No. 92 Hi-Speed enclosed shields are desired. Note the stands for holding the rear section upright in convenient position for attaching.



Illust. 2 — No. 13 (special) tool equipment for 34 to 42-inch rows. This equipment has two additional 8-inch sweeps on the outside but is otherwise the same as the regular No. 10 tool equipment.



Illust. 3 — No. 36 (special) tool equipment for narrow rows (28 to 32-inch). Front section consists of four 8-inch full sweeps (6 106 B) and two right-hand and two left-hand 10-inch half-sweeps (511 538 R1 and 511 539 R1) with No. 16 style spring trips and No. 87 (R.H.) and No. 88 (L.H.) cultivator shields. Rear section is equipped with three 10-inch sweeps (6 107 B) with No. 16 style spring trips and No. 65 jockey arch. Any of the sweeps or shovels on page 238 may be substituted for those specified. The No. 92 Hi-Speed enclosed shield may be had in place of No. 87 and 88 shields.



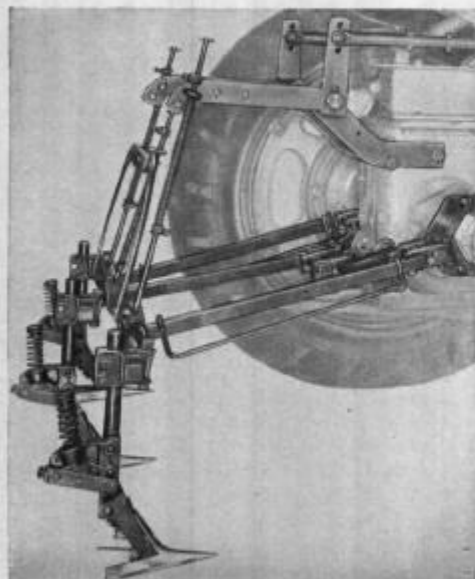
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Illust. 4 — No. 56 (special) spring-tooth tool equipment for 38 to 42-inch rows. Front section consists of five right-hand and five left-hand spring teeth with 2 1/2 x 11-inch double-pointed shovels. Rear section consists of one left-hand and two right-hand spring teeth with 2 1/2 x 11-inch double-pointed shovels and No. 65 jockey arch. The No. 95 cultivator shields shown are supplied only when ordered. Other size shovels can be obtained if ordered.



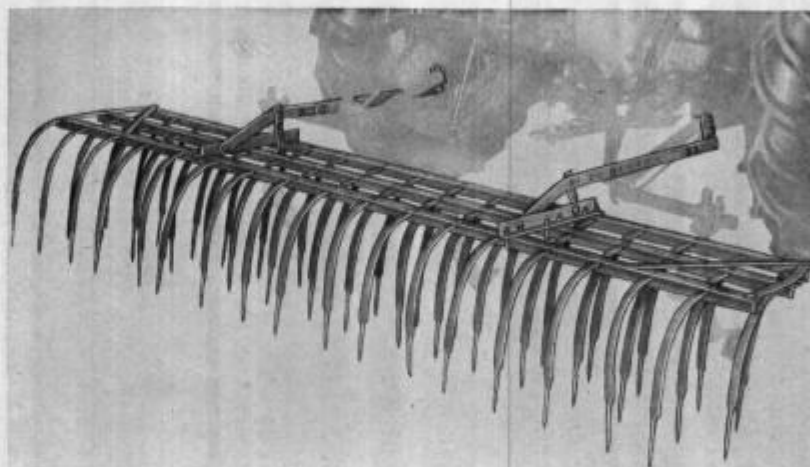
Farmall C

C-244 Cotton and Corn Cultivator

Special Equipment



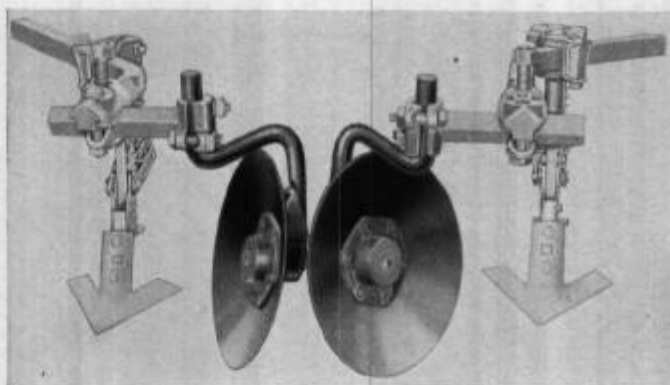
Illust. 1 — Cultivator rear section equipped with lift mechanism for use with Universal Rockshaft. When the rear section is to be controlled by the Universal Rockshaft, a special pressure rod bundle (513 666 R91) must be ordered with the cultivator.



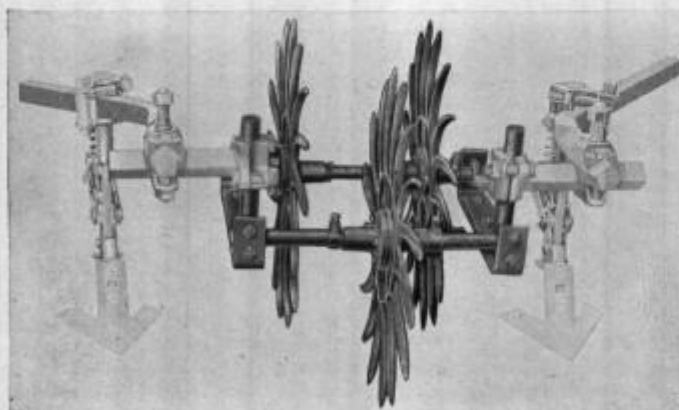
Illust. 3 — No. 5 weeder-mulcher attachment, 10-ft. wide. Used behind the cultivator rear section, it levels and mulches the soil and kills the young weeds. It is especially useful for working drilled and hill-drop rows, crops planted on the contour, as well as for check-row crops when it is desired to keep the ground level for cross cultivation.

Special Cultivating Attachments

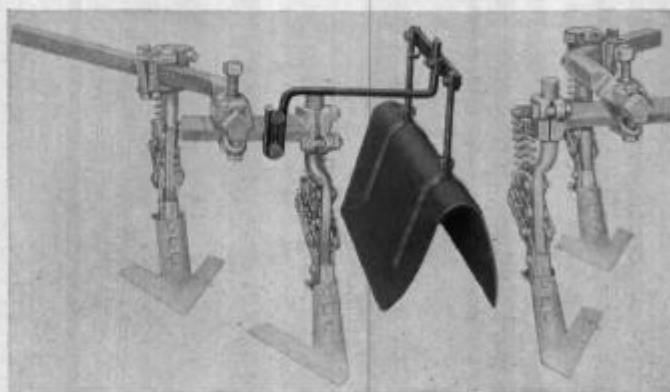
A variety of supplementary cultivating equipment for the C-244 cultivator can be supplied on special order. This equipment adapts the cultivator to special field or crop conditions, thereby greatly enhancing its usefulness. Available equipment includes a weeder-mulcher attachment for mulching and leveling the soil behind the cultivator; rotary weeder attachments for in-the-row eradication of weeds and cultivation of crops while still small; disk hiller attachments for "hilling" the soil around the plants in late cultivating operations or for "barring off" operations when cultivating bedded crops; and special covered shields which provide protection for young plants when cultivating at fast speeds.



Illust. 4 — No. 21 disk hiller attachment mounted for "barring off" operation. The disks can also be set to throw the dirt toward the plants for "hilling" to kill weeds in the row.



Illust. 2 — No. 6 rotary weeder attachment for "in-the-row" cultivation of young crops. The rotary hoe type wheels are spaced $2\frac{1}{2}$ inches apart.



Illust. 5 — No. 92 Hi-Speed enclosed shield, recommended when cultivating small crops at fast speed. The long enclosed shields offer maximum plant protection. This parallel suspended shield is adjustable so that it can be raised, allowing soil to work around the plants and cover small weeds.



HM-221 Two-Row Cultivator

(For Farmalls H and M)



Illust. 1 — The Farmall-H tractor with the HM-221 power-lift cultivator. This cultivator can also be used on the Farmall-M tractor.

The HM-221 Farmall cultivator is designed for cross cultivation of crops planted in checkrows. It will work in rows spaced from 32 to 44 inches apart.

This cultivator is designed so that the front gangs, which carry only the front two inside standards, are pivoted as the tractor is steered. This is accomplished by linkage which connects to a lever on the upper bolster of the tractor.

The HM-221 is supplied as a power-lift cultivator for use with Farmall Lift-All and may be ordered with regular lift, delayed lift or selective lift.

The cultivator can be converted into an excellent beet, bean, or vegetable cultivator by installing a parallel tool-bar attachment in place of the regular standards which are long enough to accommodate 4 rows 24 inches apart or 2 rows 48 inches apart.

Regular Equipment

No. 27 jockey arch with Nos. 10 and 52 tool equipment. No. 79 jockey arch with Nos. 4, 31, and 72

tool equipment. No. 65 jockey arch, rear section, for power-lift cultivators. Nos. 49 and 75 shields with Nos. 4, 31, 52, and 72 tool equipment. No. 68 shields with No. 10 tool equipment. Choice of tool equipment as listed in Specifications below.

Special Equipment

Nos. 14, 19, and 20 disk hillers. No. 65 jockey arch for hand-lift cultivators. No. 7 moldboard hiller. No. 1 rotary weeder attachment. No. 5 rotary shield. POKA-15 (48-in.) knife attachment. No. 91 spring-tooth attachment for use with No. 10 tool equipment. No. 7 bean harvester attachment. Two-row peanut digger attachment. No. 1 potato hiller attachment.

Delayed power-lift cultivators are available on special order for 28 to 34-in. rows. Package of parts for using the cultivator on the Farmall-MD.

Beans, Beets and Vegetable Equipment—No. 7 tool-bar attachment with 10 tool-bar clamps (hand lift). Choice of tools as listed on pages 250-J to 250-N. No. 80 shield.

Specifications

Cult. No.	Tool Equip. No.	Front Section	Rear Section	Net Weight (Approx.)—Lb.		
				Type of Lift		
				Power Reg.	Power Selective	Power Delayed
HM-221	4	4 spring trips with 10-in. half sweeps	7 spring trips with (3191 B) 8½-in. sweeps	742	770	805
HM-221	10	8 spring trips with 4 10-in. half sweeps and 4 (6191 B) 8½-in. sweeps	3 spring trips with (6042 B) 10-in. sweeps	774	802	837
HM-221	31	4 No. 9 spring trips (1¼-in. standards) with 10-in. half sweeps	7 spring trips with (3191 B) 8½-in. sweeps	752	780	815
HM-221	52	4 spring teeth with (PO 14329) 1½ x 11-in. double point shovels	7 spring teeth with (3191 B) 8½-in. sweeps	795	822	858
HM-221	72	4 spring trips with 10-in. half sweeps	7 spring teeth with (3191 B) 8½-in. sweeps	768	796	830



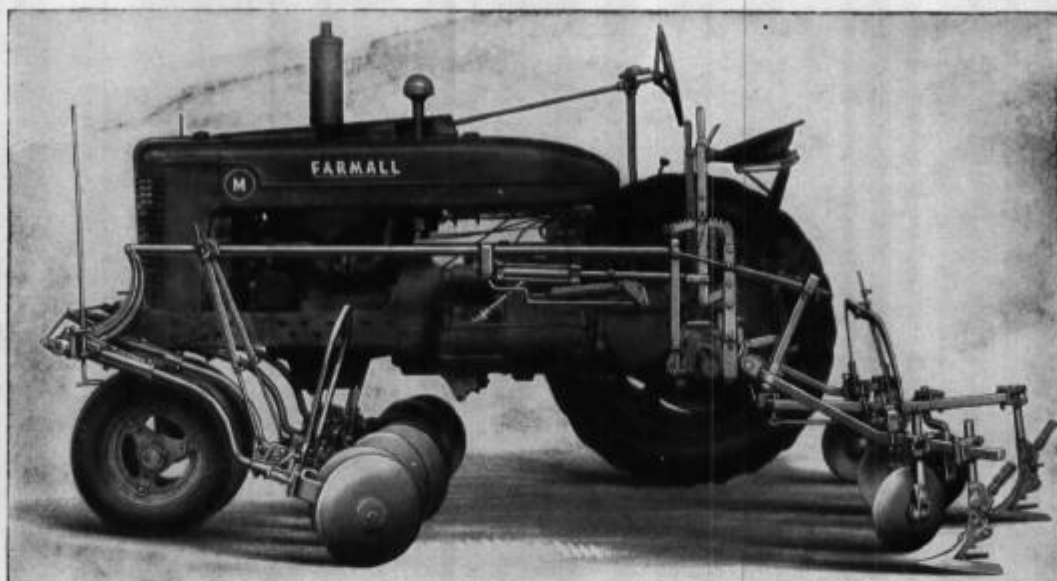
HM-228 Two-Row Disk Cultivator

(For Farmalls H, M and MD)

The Farmall HM-228 disk-type cultivator is designed for working 28 to 44 in. rows where soil conditions make it impractical to use shovel and sweep type of ground tools.

Weeds and Vines

The HM-228 disk cultivator is specially adapted for work in fields infested with morning glories or other creeping weeds and vines. In this type of vine, where it would be hopeless to try to cultivate with shovels, the disks do an excellent job without clogging.



Illust. 1 — The HM-228 power-lift cultivator on the Farmall-M tractor. It also works without change on Farmalls H and MD.

Gumbo Soil or Lowland

This cultivator is an excellent performer in heavy gumbo soil or lowland that is subject to flooding. The disks have a keen cutting edge which parts, turns, and breaks the soil. This allows the rains to be absorbed if the ground is dry and caked, or, if it is wet and soggy, the ground dries out in a loose condition that encourages plant growth.

Hidden Stumps and Roots

In soils where there are hidden stumps and roots the disks have an advantage over shovels in that they roll over obstructions without damage to the disks and without delaying the work.

Barring Off

Provisions are made for using barring-off disks on first cultivation. With this equipment, once over with the Farmall disk cultivator is equal to two cultivations with horse-drawn equipment, since the barring-off disks work close to the rows and throw the dirt away, while

regular disks throw the soft dirt back to the plants. On the HM-228 the rear section cuts out the row centers and works the wheel tracks

Power-Lift

The HM-228 is supplied with power-lift (Lift-All). Power lift can be *regular* lift for raising all disks at once, or *delayed* lift, in which case the rear section stays down until the end of the row is reached. *Selective* lift can be supplied for use in combination with *regular* lift and allows either side to be raised separately.

Regular Equipment

No. 62 shields. No. 65 jockey arch on the rear section of the power lift. 13-in. disk hillers on the rear section, 16-in. disks on the front section.

Special Equipment

No. 10 (12-in.) disk hillers for the front section. No. 7 moldboard hiller. No. 65 jockey arch for the rear section of the hand-lift cultivator.

Specifications

Cult. No.	Equip. No.	Type of Lift	Row Spacing (Inches)	Front Section	Rear Section	Net Weight (Approx.)
HM-228	23	Power, Regular	36-44	8, 16-in. disks on disk gangs	3 spring trips with (6043 B) 12-in. sweeps and 2 No. 15 and 2 No. 7 disk hillers	1157 lb.
HM-228	23	Power, Delayed	36-44	8, 16-in. disks on disk gangs	3 spring trips with (6043 B) 12-in. sweeps and 2 No. 15 and 2 No. 7 disk hillers	1155 lb.



HM-238 Two-Row Cultivators

(For Farmalls H, M and MD)



Illust. 1 — The HM-238 cultivator on the Farmall-M. The model shown is equipped with No. 14 tool equipment.

- High-speed cultivators.
- Fast, accurate dodging.
- Unobstructed view of the row and work.
- Parallel-link construction.
- Special equipment for every requirement.

The HM-238 is a two-row cultivator designed for high-speed — speeds up to 5 m.p.h. — cultivation of corn, cotton, potatoes, and other crops planted in rows spaced from 28 to 48 inches apart. This front-mounted cultivator is an excellent cultivator for crops grown on terraces and contours as well as on level fields.

Fast, Accurate Dodging. The rigid construction of the cultivators, plus the close-coupled design feature which places the front shovels close to the axis of the front wheels, gives instant response as the tractor is

steered. Adjustments are provided for correction of wear to keep gangs rigid by taking up slack. Slack affects accurate high-speed cultivation.

Shovels or Sweeps Really Dig In. The two-rod parallel-link construction which connects the gangs to the cultivator supports on the tractor, keeps the tool bars level at any position. Once properly set, all front ground tools are always at the same angle regardless of the depth at which they work. This feature plus the strong construction assures a cultivator that takes to the ground fast, and stays "put" in the hardest of soils.

Specifications

Cult. No.	Tool Equip. No.	Front Section	Rear Section	Net Weight (Approx.)—Lb.		
				Type of Lift		
				Power Regular	Power Selective	Power Delayed
HM-238	10	8 spring trips with 4 10-in. half sweeps and 4 (6106 B) 8-in. sweeps.....	3 spring trips with (6107 B) 10-in. sweeps....	834	862	899
HM-238	11	8 spring trips with (6106 B) 8-in. sweeps....	7 spring trips with (6106 B) 8-in. sweeps....	917	...	984
HM-238	12	9 spring trips with 4 10-in. half sweeps, 4 (6106 B) 8-in. sweeps and 1 (6107 B) 10-in. sweep.....	2 spring trips with (6107 B) 10-in. sweeps....	795	823	864
HM-238	14	11 spring trips with 4 10-in. half sweeps, 6 (6106 B) 8-in. sweeps and 1 (6107 B) 10-in. sweep.....	None.....	662	690	...
HM-238	15	11 spring trips with (25702 B) 2½ x 11-in. double point shovels.....	2 spring trips with (25702 B) 2½ x 11-in. double point shovels.....	798	...	862
HM-238	24	8 spring trips with 4 10-in. half sweeps and 4 (6106 B) 8-in. sweeps.....	3 spring trips with (6107 B) 10-in. sweeps....	830	...	896
HM-238	56	10 spring teeth with (25702 B) 2½ x 11-in. double point shovels.....	3 spring teeth with (25702 B) 2½ x 11-in. double point shovels.....	892	920	958
HM-238	57	7 spring teeth with (25702 B) 2½ x 11-in. double point shovels (for use with Potato Hoe Attachment).....	(2 spring teeth with (25702 B) 2½ x 11-in. double point shovels.....	719	747	784
HM-238	74	8 spring trips with 4 10-in. half sweeps and 4 (6106 B) 8-in. sweeps.....	No. 90 spring tooth attachment (6 spring teeth).....	854	...	919
HM-238	75	9 spring trips with 4 10-in. half sweeps, 4 (6106 B) 8-in. sweeps and 1 (6107 B) 10-in. sweep.....	(No. 90 spring tooth attachment (4 spring teeth).....	808	...	877



INTERNATIONAL HARVESTER



HM-238 Two-Row Cultivators

(For Farmalls H, M and MD) (Continued)

Cultivator Works Where Operator Can See It. The clean-cut lines of the forward-mounted cultivator give an unobstructed view of the row and the work being done. This enables the operator to do close, accurate work, even in young crops, with minimum fatigue at high speeds.

High-Speed Sweeps. These are sweeps designed to work the soil and kill the weeds at speeds up to 5 m.p.h. without throwing dirt. The soil glides over them like water off a duck's back. Enclosed shields, known as lister type, are available to make high speed cultivation of small plants possible.

Power Lift. With Farmall Lift-All and a power-lift cultivator the operator has a combination that can be operated day in and day out with minimum effort and fatigue. Power lift cultivators can be had either as regular lift, selective lift or delayed lift. The selective lift is just the thing for working point rows on terraced and contoured fields.

Beets, Beans and Vegetables. The cultivator can be converted into an excellent beet, bean or similar vegetable cultivator by replacing the standards with parallel tool bars and vegetable type ground tools. This makes it possible to cultivate the most delicate crops. This equipment makes it possible to work a maximum of 4 rows spaced 22 inches apart and 6 rows spaced 12 to 14 inches apart and many other row-spacing combinations.



Illust. 1 — The HM-238 cultivator, with spring teeth and double-point shovels.

Regular Equipment

No. 68 shields for all except 15, 24 and 57 tool equipment. No. 74 front jockey arch. No. 65 rear jockey arch for Nos. 10, 11, 24, 56 and 74 tool equipment. Choice of tool equipment as shown in the Specifications.

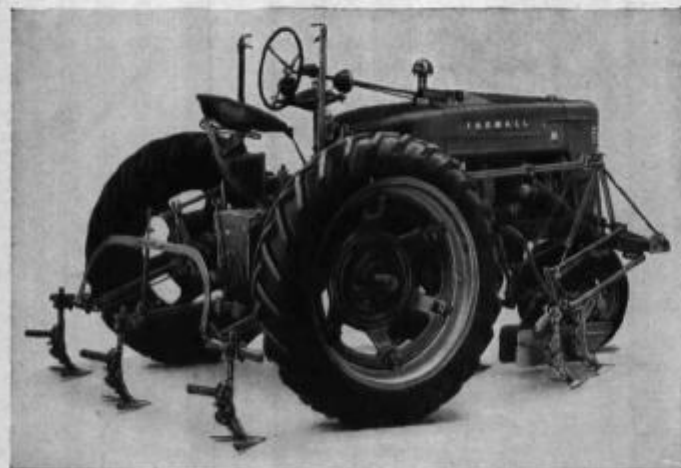
Special Equipment

No. 7 Moldboard hiller. Nos. 14, 20 and 26 disk hillers. Nos. 90 and 91 spring tooth attachment. Tobacco hoe attachment. Potato hoe attachment for use with No. 57 equipment. No. 1 potato hiller. HM-8 two-row peanut digger. No. 31 bean harvester non-irrigated type. Front vine lifter for use with No. 31 bean harvester. Nos. 85 and 86 lister-type parallel-action shields for high-speed cultivation of small crops.

Delayed power-lift cultivator for working 28 to 32-in. rows. No. 69 shields (offset type) are used when cultivating 28 to 32-in. rows. Lister cultivator equipment for use with No. 24 tool equipment. No. 79 shields are used with No. 24 lister cultivator attachment.

A package of parts is available to adapt the HM-238, when equipped with Nos. 10 or 11 tool equipment, for use with a flame cultivator. These parts make it possible to transfer three shovels from the rear section to the front section and leave the rear of the tractor free for attaching a flame cultivator.

Beet, Bean or Vegetable Equipment. No. 7 tool-bar attachment. No. 80 shields. Choice of vegetable tools as listed on pages 250-J to 250-N.

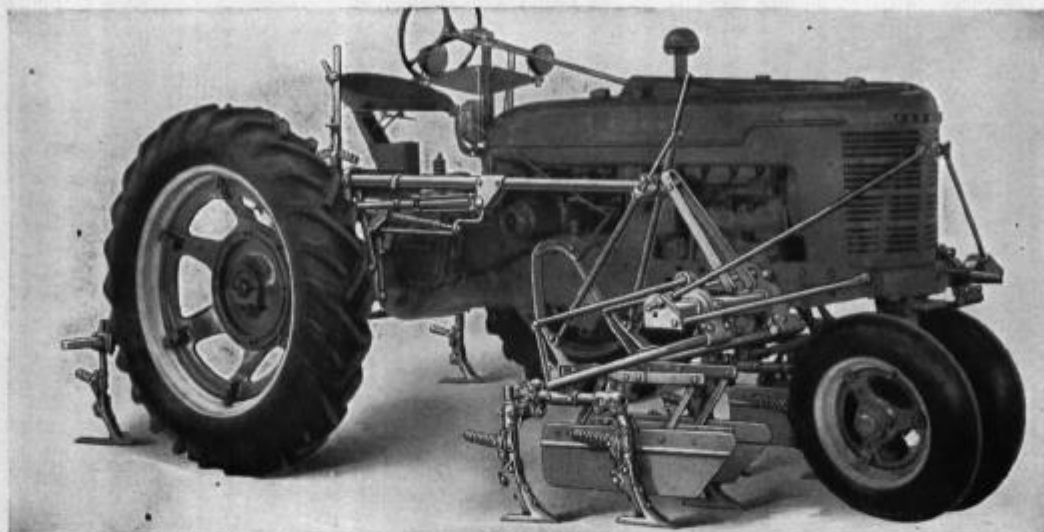


Illust. 2 — The HM-238 cultivator—eight spring trips with four 10-in. half sweeps and four 8-in. sweeps on the front, and three spring trips with 10-in. sweeps on the rear.



HM-236 Two-Row and HM-236-S (Skip-Row) Cultivators

(For Farmalls H, M and MD)



Illust. 1 — The HM-236 with popular equipment. The shovels can be adjusted to work the sides of beds or ridges.

The HM-236 is the same cultivator as the HM-238 except it is designed to work row-crops grown on beds or in furrows spaced 28 to 48 inches apart. The gangs are equipped with round pipe-type tool attaching bars whereas the HM-238 has solid rectangular tool bars. The barrel-type standard attaching clamps permit tilting the standards to work the sides of beds or furrows. For all other features refer to the HM-238.

The HM-236-S cultivator is designed for cotton areas having such low rainfall that every third row is left

unplanted. The cultivator has 6 gangs so that it will work 2 rows of cotton and one-half of the unplanted row on each side. The HM-236-S is similar to the HM-236 except that longer cultivator frames with truss rods are used on the tractor to carry the additional two gangs and also lift pipes are provided, and a gauge wheel is provided for each of the outside gangs.

The HM-236 can be converted to an excellent beet, bean or similar vegetable cultivator by replacing the standards with a parallel tool bar attachment.

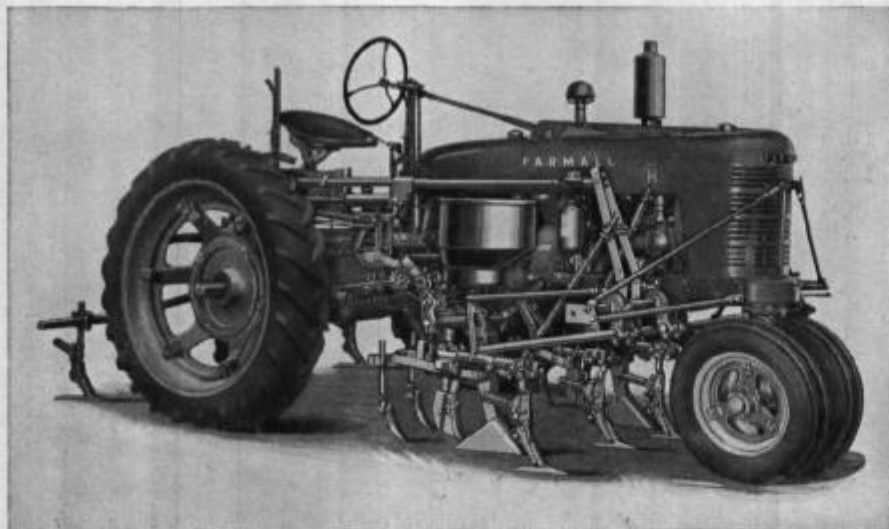
Specifications

Cult. No.	Tool. Equip. No.	Type of Lift	Row Spacing (Inches)	Front Section	Rear Section	Net Weight (Approx.) Lb.
HM-236	9	Power, Regular	28-48	8 spring trips with (6106 B) 8-in. sweeps	2 spring trips with (6107 B) 10-in. sweeps	771
HM-236	9	Power, Selective	28-48	8 spring trips with (6106 B) 8-in. sweeps	2 spring trips with (6107 B) 10-in. sweeps	799
HM-236	9	Power, Delayed	36-48	8 spring trips with (6106 B) 8-in. sweeps	2 spring trips with (6107 B) 10-in. sweeps	840
HM-236	10	Power, Regular	28-48	8 spring trips with (6106 B) 8-in. sweeps	3 spring trips with (6107 B) 10-in. sweeps	842
HM-236	10	Power, Selective	28-48	8 spring trips with (6106 B) 8-in. sweeps	3 spring trips with (6107 B) 10-in. sweeps	870
HM-236	10	Power, Delayed	36-48	8 spring trips with (6106 B) 8-in. sweeps	3 spring trips with (6107 B) 10-in. sweeps	908
HM-236-S	25	Power, Regular	36-44	12 spring trips with 10 (6106 B) 8-in. sweeps and 2 (6108 B) 12-in. sweeps	3 spring trips with (6107 B) 10-in. sweeps	1205
HM-236-S	25	Power, Delayed	36-44	12 spring trips with 10 (6106 B) 8-in. sweeps and 2 (6108 B) 12-in. sweeps	3 spring trips with (6107 B) 10-in. sweeps	1266



HM-236 Two-Row and HM-236-S (Skip-Row) Cultivators

(Continued)



Illust. 1 — HM-236 Cultivator with HM-99 Planter. This combination makes an economical unit for the grower of cotton and corn. A similar planter known as the HM-100 is equipped with runner type openers, covering blades and press wheels. For detailed information refer to the planter section of this catalog.

Regular Equipment

No. 68 shields. No. 74 front jockey arch. No. 65 rear jockey arch on cultivators equipped with No. 10 tool equipment. Gauge wheels on the HM-236-S cultivators.

Special Equipment

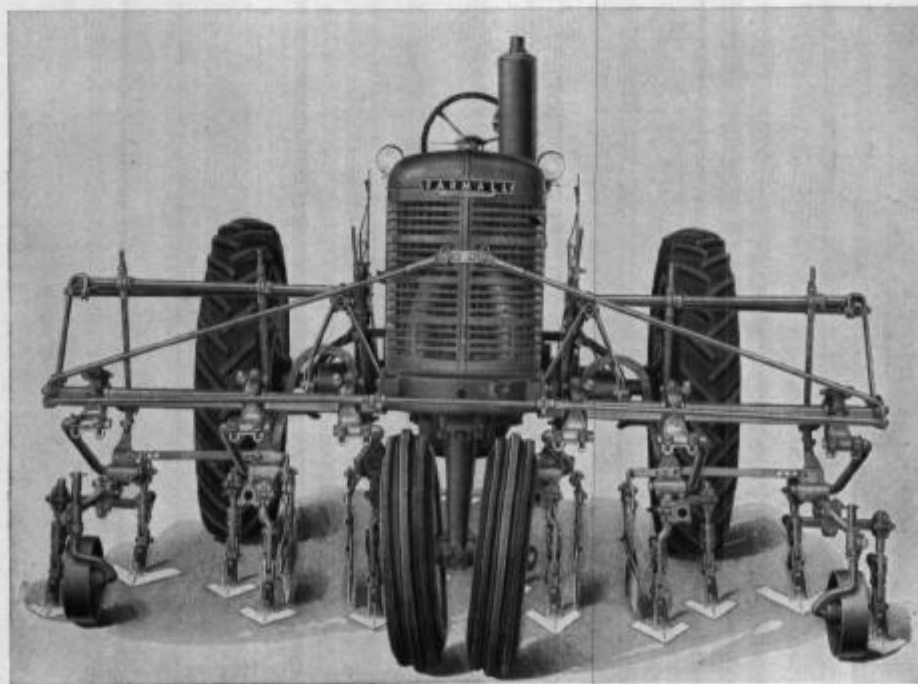
The HM-236 equipped with delayed power-lift, for cultivating 28 to 34 in. rows, can be obtained on special order. No. 69 shields, for use with above cultivator.

HM-44-C fertilizer attachment for side dressing.

Nos. 14, 20 and 26 disk hillers. No. 7 moldboard hiller. No. 90 spring tooth attachment for use with No. 9 tool equipment. No. 91 spring tooth attachment for use with No. 10 tool equipment. HM-9 two-row peanut digger attachment for use with the HM-236.

Beet, Bean and Vegetable Equipment: No. 7 tool bar attachment for HM-236 and vegetable tools as listed on pages 240 to 242.

Illust. 2 — HM-236-S Skip Row Cultivator for use in semi-arid regions where crops are planted with every third row skipped. With this cultivator the idle ground can be fallowed at the time the crop is cultivated, thus eliminating a separate operation.



HM-240 Two-Row Cultivator

(For Farmalls H and M)

The HM-240 is the same cultivator as the HM-238 except that it is equipped with spring trips having $1\frac{1}{16}$ -inch standards in place of $1\frac{1}{4}$ -inch standards. The heavier standards are for work in tough soils or deep cultivation.

For general features refer to the description of the HM-238. The cultivator is available as power lift type only.

Regular Equipment

No. 74 front jockey arch. No. 65 rear jockey arch with Nos. 10, 11, 13, 27, 32, 54, 56 and 74 tool equipment. No. 68 shields with Nos. 10, 11, 12, 32, 54, 56 and 74 tool equipment. Choice of tool equipment as shown in Specifications below.

Special Equipment

No. 69 shields for use when cultivating 28 to 32-in. rows. No. 79 shields for use with Nos. 15 and 27 tool equipment. No. 30301-B clamp for tilting the standards. No. 93 spring tooth attachment. No. 7 moldboard hillers. No. 2 disk hillers. No. 11 disk hillers. No. 9 rotary weeder attachment. Potato hoe. HM-9 two-row peanut digger. No. 2 potato hiller. Tobacco hoe. No. 31 bean harvester, non-irrigated type. Nos. 85 and 86 lister-type parallel-action shields.

A package of parts is available to adapt the HM-240, when equipped with Nos. 10 or 11 tool equipment, for use with a flame



Illust. 1 — The HM-240 is a heavy-duty two-row cultivator for Farmalls H and M.

cultivator. These parts make it possible to transfer three shovels from the rear section to the front section and leave the rear of the tractor free for attaching a flame cultivator.

Beet, Bean and Vegetable Equipment: No. 11 tool-bar attachment for rows spaced from 16 to 24-inches apart. No. 80 shields for use with No. 11 tool-bar. Choice of vegetable tools as listed on pages 240 to 242-B.

Specifications

Cult. No.	Tool Equip. No.	Front Section	Rear Section	Net Weight (Approx.)—Lb.		
				Type of Lift		
				Power Regular	Power Selective	Power Delayed
HM-240	10	8 No. 9 style heavy spring trips with (6106 B) 8-in. sweeps	3 No. 9 style heavy spring trips with (6107 B) 10-in. sweeps	859	887	925
HM-240	11	8 No. 9 style heavy spring trips with (6106 B) 8-in. sweeps	7 No. 9 style heavy spring trips with (6106 B) 8-in. sweeps	948	.....	1,015
HM-240	12	9 No. 9 style heavy spring trips with 4 10-in. half sweeps, 4 (6106 B) 8-in. sweeps and 1 (6107 B) 10-in. sweep	2 No. 9 style heavy spring trips with (6107 B) 10-in. sweeps	822	.....	901
HM-240	13	10 solid adjustable type standards with 4 x 14-in. single point shovels	3 solid adjustable type standards with (6107 B) 10-in. sweeps	880	.....	950
HM-240	15	11 No. 9 style heavy spring trips with (25702 B) $2\frac{1}{2}$ x 11-in. double point shovels	2 No. 9 style heavy spring trips with (25702 B) $2\frac{1}{2}$ x 11-in. double point shovels	840	.....	905
HM-240	26	10 solid adjustable type standards with 4 x 14-in. single point shovels	"R" type with 90-in. tool bar and 3 tool bar clamps**	818	.....	879
HM-240	27	8 No. 9 style heavy spring trips with (6106 B) 8-in. sweeps	7 No. 9 style heavy spring trips with 4 (6041 B) 8-in. sweeps and 3 (6043 B) 12-in. sweeps	1,008	.....	.....
HM-240	*32	8 No. 9 style heavy spring trips with (6106 B) 8-in. sweeps	3 No. 9 style heavy spring trips with (6107 B) 10-in. sweeps	862	.....	928
HM-240	54	8 spring teeth with (25702 B) $2\frac{1}{2}$ x 11-in. double point shovels	3 spring teeth with (25702 B) $2\frac{1}{2}$ x 11-in. double point shovels	882	.....	947
HM-240	56	10 spring teeth with (45702 B) $2\frac{1}{2}$ x 11-in. double point shovels	3 spring teeth with (25702 B) $2\frac{1}{2}$ x 11-in. double point shovels	921	.....	987
HM-240	57	7 spring trips with (25702 B) $2\frac{1}{2}$ x 11-in. double point shovels	2 spring teeth with (25702 B) $2\frac{1}{2}$ x 11-in. double point shovels	737	.....	801
HM-240	74	8 No. 9 style heavy spring trips with (6106 B) 8-in. sweeps	No. 93 spring tooth attachment (6 spring teeth)	879	.....	945

*No. 32 tool equipment is the same as No. 10 except the left inside tool bar is the same length as the right inside tool bar.

**Tool clamps 28309-BA, 30200-BB or 29601-BA as ordered. See page 250-J.



INTERNATIONAL HARVESTER



HM-242 and HM-242-A Combination Cultivators

(For Farmalls H, M and MD)

Quickly Changed From Two Rows to Four Rows

The HM-242 and the HM-242-A Farmall cultivators are constructed so that the tooling equipment can be changed quickly and easily from a two-row corn cultivator for working two rows spaced from 32 to 42 inches apart, to a four-row beet or bean cultivator for cultivating four rows 20 to 28 inches apart.



Illust. 1 — The HM-242 cultivator mounted on a Farmall-H and tooled for the cultivation of corn.

Regular Equipment

No. 65 rear jockey arch.

Special Equipment

Delayed power-lift cultivators can be ordered with a special rear rockshaft for cultivating 28 to 34-in. rows. No. 10 tool equipment for the front section of No. 242 consists of: 8 spring trips with 4 10-in. half sweeps and 4 (6106-B) 8-in. sweeps, No. 79 shields, and No. 74 jockey arch. No. 11 tool equipment for front section of No. 242-A consists of: 8 spring trips with 4 (6128-B) 8-in. sweeps, 2 (6126-B) and 2 (6127-B) half sweeps, No. 79 shields, and No. 74 front jockey arches. No. 91 spring tooth for 3-gang rear section. Nos. 14 and 26 disk hillers. No. 29 bean harvester. No. 1 potato hiller.

Beet, Bean and Vegetable Equipment. No. 9 tool bar (with 18 tool-bar clamps) for cultivating rows spaced from 20 to 28-in. apart. Choice of vegetable tools as listed on pages 240 to 242. No. 80 shields. Steel gauge wheels. Rubber overtires for gauge wheels.

The HM-242 Cultivator

The HM-242 cultivator has regular gangs and tool bars for handling two rows of corn. Special tool bars, interchangeable on the regular gangs, are used for four rows of beets or beans. Tool bars for corn or vegetables may be interchanged without changing the adjustment of the tools attached to the tool bars.

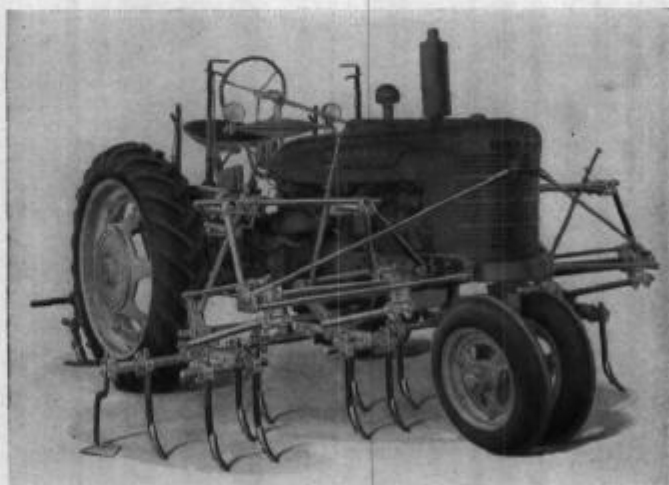
The cultivator rear frame is narrow enough to clear the tractor tires and facilitate the removal of the rear section when the rear tractor wheels are set for cultivating 28-inch rows.

The HM-242-A Cultivator

The HM-242-A is the same as the HM-242 except that the front frames are 8 inches longer and it has a 7-shovel rear section. The rear gang arch is the conventional type which allows setting the rear gangs for wide or narrow rows.

Power Lift

The HM-242 and the HM-242-A are regularly supplied as power-lift cultivators. Power-lift connecting parts for use with the cylinder-type hydraulic power lift are available in the following styles: (1) regular lift, in which case all shovels, front and rear, are raised together, (2) delayed lift, which leaves the rear section down to finish the rows at the end, or holds it up at the beginning of the rows until it reaches the point where the front shovels entered, (3) selective lift, which raises either side independently for working point rows.



Illust. 2 — The HM-242 cultivator mounted on a Farmall-H and tooled for the cultivation of vegetables.

Specifications

Cult. No.	Tool Equip. No.	Type of Lift	Row Spacing (Inches)	Front Section	Rear Section	Net Weight (Approx.)
HM-242	10	Power, Regular	32-42	Tool bars only—no ground-working tools.....	3 spring trips with (6107 B) 10-in. sweeps.....	750 lb.
		Power, Delayed	36-42	Tool bars only—no ground-working tools.....	3 spring trips with (6107 B) 10-in. sweeps.....	803 lb.
HM-242-A	11	Power, Regular	32-42	Tool bars only—no ground-working tools.....	7 spring trips with (6128 B) 8-in. sweeps.....	781 lb.
		Power, Delayed	36-42	Tool bars only—no ground-working tools.....	7 spring trips with (6128B) 8-in. sweeps.....	834 lb.



HM-243 Two-Row Potato Cultivator

(For Farmalls H, M and MD)

The HM-243 is a two-row, power-lift cultivator especially designed for working potatoes and similar crops grown in irrigated areas where the soil has a tendency to pack between the rows. The front gangs are the same as used on the HM-240, that is, it has 1- $\frac{3}{16}$ -in. diameter standards.

Tool Bar Rear Section

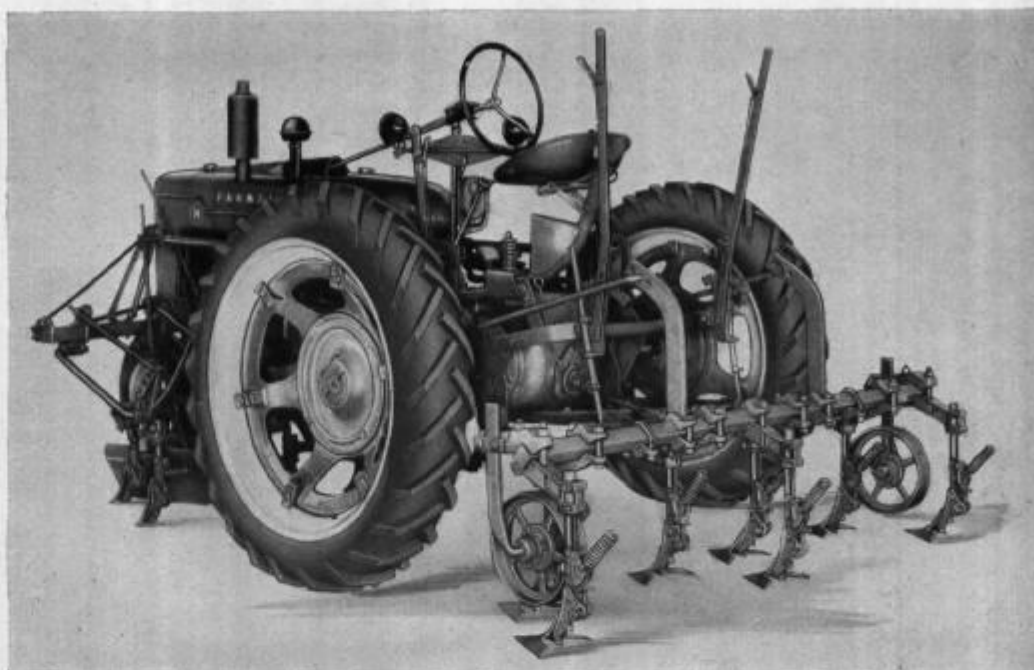
The outstanding feature of the HM-243 cultivator is that the rear-section consists of a 2-inch solid square, 90-in. long tool bar, mounted by parallel acting linkage. This extra heavy tool bar is required for cultivating the hard soil between the rows in irrigated areas. It is connected by parallel links to the tractor so that the tool equipment will maintain the correct suction regardless of the working depth.

Conveniently located levers are provided to level the rear tool bar when working in uneven ground. Gauge wheels are provided on the rear section to control the depth of the ground tools.

The HM-243 is designed for delayed action power-lift to permit the front section to be raised before the rear section when leaving the rows and to be lowered before the rear section when entering the rows. Two 1 $\frac{3}{4}$ -in. cylinders are required for the front section and two for the rear section. They are not furnished as regular equipment.

Regular Equipment

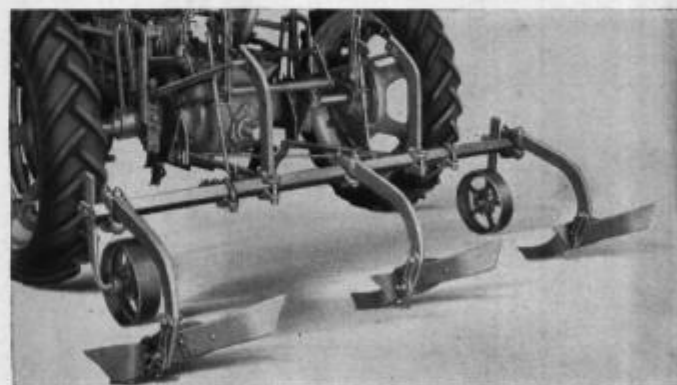
No. 68 shields. No. 74 front jockey arches. Two gauge wheels for rear section.



Illust. 1 — HM-243 Farmall cultivator mounted on the Farmall H. No. 11 tool equipment is shown except that double-point shovels are illustrated on the front and 10-in. Joyce sweeps on the rear. Nine-inch single-point shovels are regular with No. 11 equipment.

Special Equipment

No. 6 moldboard hillers. No. 7 moldboard hillers.



Illust. 2 — No. 6 moldboard hiller for use in cleaning out irrigation ditches. This attachment, complete with standards and wings, is available as special equipment.

Specifications

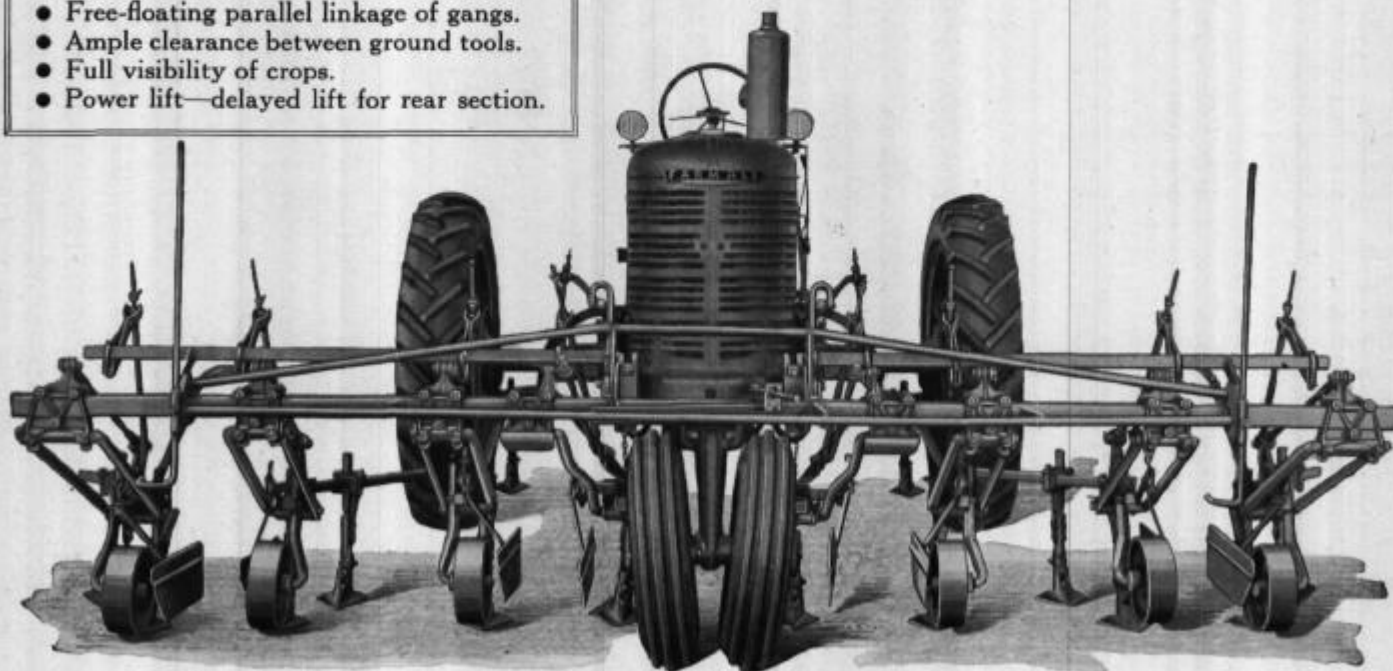
Cult. No.	Tool Equip. No.	Type of Lift	Row Spacing (Inches)	Front Section	Rear Section	Net Weigh (Approx.) Lb.
HM-243	11	Power, Regular	28-48	8 spring trips with (2629 BD) 9 in. shovels	90-in. long, 2-in. square, tool bar with 7 spring trips with (2629 BD) 9 in. shovels and with POGW-113 and POGW-114 steel gauge wheels. . .	1298



M-448 Four-Row Cultivator

(For Farmalls M and MD)

- Works four rows in level, bedded or terraced crops.
- Free-floating parallel linkage of gangs.
- Ample clearance between ground tools.
- Full visibility of crops.
- Power lift—delayed lift for rear section.



Illust. 1 — M-448 4-row cultivator for Farmall-M and MD tractors. The gangs are raised by a bale-type lift, which is close-coupled to give the operator a clear view of the row ahead.

The M-448 is a 4-row cultivator designed for fast, close work in either level, bedded or terraced crops, row-spaced from 36 to 42 inches apart.

Each gang is connected by parallel linkage to a heavy square-shaped pipe which extends across the front of the tractor and is sturdily trussed both in front and above. Each gang is free to float up and down for work in uneven ground. The parallel links maintain the ground tools at the correct angle regardless of the depth at which they work. Tools that are properly set take to the ground fast and maintain their depth. Each

gang, except the center two, have gauge wheels to assure uniform depth in uneven ground.

The close coupled feature of the bale-type lift gives the operator an unobstructed view of the rows ahead and the work being done.

The M-448 is regularly equipped with delayed action power lift to permit independent control of the front and rear sections when entering and leaving the rows. Two 2¼-in. hydraulic cylinders are required for the front section and one 1¾-in. cylinder is required for the rear section.

Specifications

Cult. No.	Tool Equip. No.	Type of Lift	Row Spacing (inches)	Front Section	Rear Section	Net Weight (Approx.) Lb.
M-448	16	Power, Delayed	36-42	Square tool bars with 12 spring trips and 10 (6045 B) 8-in. sweeps and 2 (6047 B) 12-in. sweeps.....	7 spring trips with (6045 B) 8-in. sweeps.....	1,555
M-448	17	Power, Delayed	36-42	Pipe tool bars with 12 spring trips and 10 (6106 B) 8-in. sweeps and 2 (6108 B) 12-in. sweeps.....	7 spring trips with (6106 B) 8-in. sweeps.....	1,645
M-448	18	Power, Delayed	36-42	Pipe tool bars with 16 spring trips and 14 (6106 B) 8-in. sweeps and 2 (6108 B) 12-in. sweeps.....	3 spring trips with (6107 B) 10-in. sweeps.....	1,646
M-448	19	Power, Delayed	36-42	Square tool bars with 18 spring trips and 16 (6045 B) 8-in. sweeps and 2 (6047 B) 12-in. sweeps.....	7 spring trips with (6045 B) 8-in. sweeps.....	1,660
M-448	21	Power, Delayed	36-42	Square tool bars with 18 spring trips and 16 (6045 B) 8-in. sweeps and 2 (6047 B) 12-in. sweeps.....	3 spring trips with (6046 B) 10-in. sweeps.....	1,567
M-448	76	Power, Delayed	36-42	Square tool bars with 12 spring trips and 10 (6045 B) 8-in. sweeps and 2 (6047 B) 12-in. sweeps.....	7 spring trips with (6045 B) 8-in. sweeps.....	1,573



INTERNATIONAL HARVESTER



M-448 Four-Row Cultivator

(Continued)

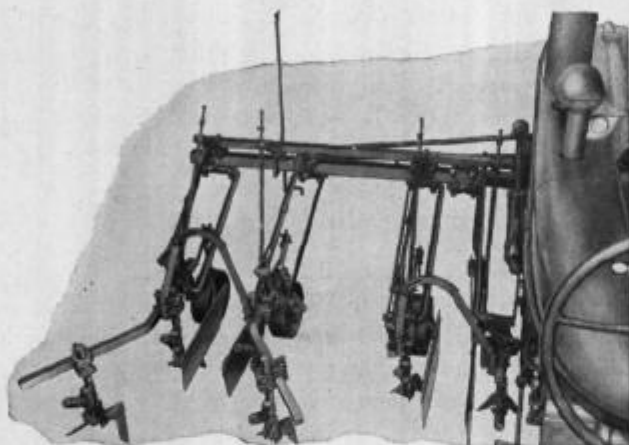
Regular Equipment

No. 9 spring trips ($1\frac{1}{16}$ -in. standards). POGW 133 steel flat tire gauge wheel. No. 85 (outside) and No. 84 (inside) front jockey arches for rectangular tool bars. No. 87 (outside) and No. 86 (inside) front jockey arches for round tool bars. No. 65 rear jockey arch. Shields. Tool equipment as listed in Specifications on preceding page.

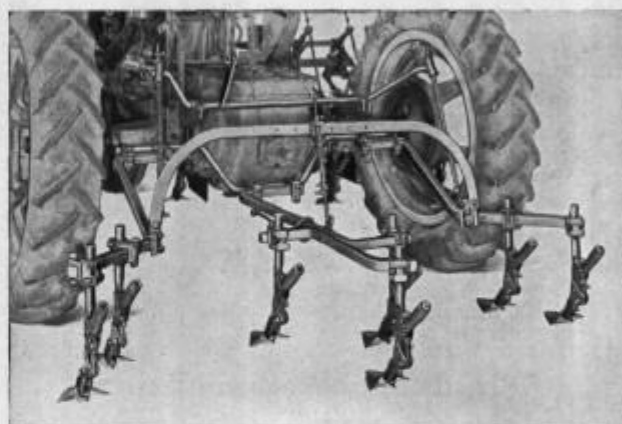
Special Equipment

Cultivators for working row spacings from 36 to

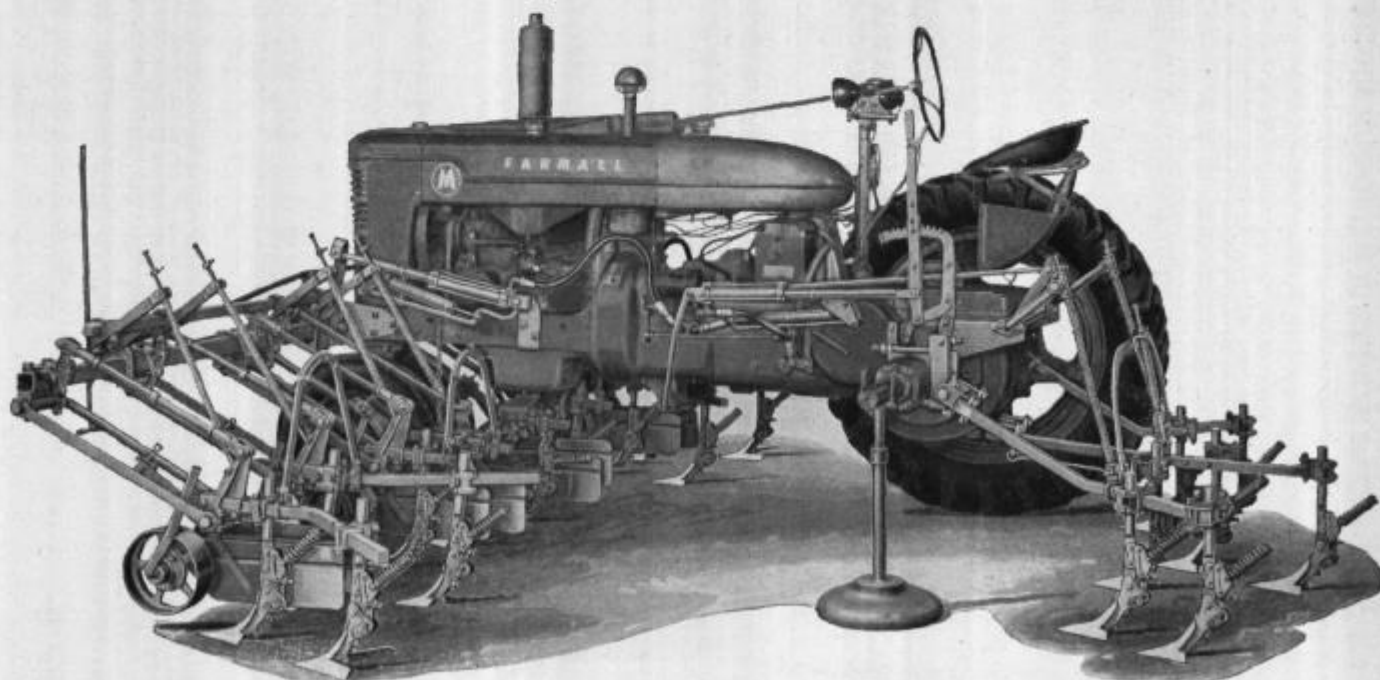
48 in. POSP-6213 tractor fender brackets. No. 16 spring trips ($1\frac{1}{4}$ -in. diameter standards). POGW-132 "V" tire gauge wheels. POGW-134 flat tire gauge wheel with rubber overtire. Clamp for tilting the standard. No. 88 spring tooth attachments for front sections. No. 93 spring tooth attachments for rear sections. No. 76 spring tooth attachments for rear sections. POGS-8 gauge shoe attachment. No. 7 moldboard hillers. Nos. 96 and 97 high-speed covered type shields. Parts to adapt cultivator for use with Regular, F-20 and F-30 Farmall tractors.



Illust. 1 — The clean-cut design of the front gangs affords the operator a clear view of each row. No. 16 tooling equipment, which has rectangular tool bars, is shown in this view.



Illust. 2 — Rear view of the M-448 Farmall cultivator showing spring trips with 8-in. sweeps. This combination is regular for Nos. 16, 17, 19 and 76 (rear section) tool equipment.



Illust. 3 — The M-448 is a power-lift cultivator, shown here with No. 16 equipment. The rear cylinder operates with delayed lift so that the rear section can remain in the ground to finish out the row, and remain raised upon entering a new row.



No. 448-G Cotton and Corn Cultivator

Forward-Mounted, Four-Row for Regular, F-20 and F-30 Farmall Tractors

- Fast, close work in crops on the flat or contour . . . on terraces . . . on the level or on beds.
- Each gang free to float in uneven ground.
- Parallel-linkage keeps gangs at correct working angle at any depth.
- Unobstructed vision of work.
- Power-lift . . . delayed lift for rear section.

The No. 448-G is a four-row cultivator for Regular, F-20 and F-30 Farmall tractors equipped with Lift-All. It is similar in construction to the M-448 four-row cultivator illustrated on pages 232 and 233 and offers all the operating features of the M-448 to owners of older models of Farmall tractors. It is for fast, close work in crops row-spaced from 36 to 42 inches apart and planted on beds, on the level or in furrows . . . on the flat or contour . . . or terraced.

Ground Tools Always at Correct Angle Regardless of Working Depth

Each gang is free to float up and down for work in uneven ground. An individual gauge wheel on each gang, except on the center two, assures uniform depth in uneven ground. Parallel linkage between the gangs and the heavy cross-beam which extends across the front of the tractor maintains the ground tools at the correct angle regardless of the working depth. Tools that are properly set take to the ground quickly and maintain their depth. Forward-mounting gives the operator an unobstructed view of the rows ahead and work being done; it also permits fast, accurate guiding of the ground tools.

Raised and Lowered by Lift-All

The cultivator is regularly equipped with delayed-action lift valve to permit independent control of the front and rear sections when entering and leaving the rows. Two $2\frac{1}{4}$ x 8-in. hydraulic cylinders are required for the front section and one $1\frac{3}{4}$ x 8-in. hydraulic cylinder is required for the rear section. One rockshaft No. 510 300 R91 is required for Regular and F-20 tractors; one rockshaft No. 510 301 R91 is required for F-30 tractors. Cylinders and rockshafts are not furnished with the cultivator because the owner may have purchased them with some other implement.

Regular Equipment

No. 9 spring trips ($1\frac{7}{16}$ -in. standards). No. 85 (outside) and No. 84 (inside) front jockey arches for Nos. 16, 19 and 76 tool equipment. No. 87 (outside) and No. 86 (inside) front jockey arches for No. 17 tool equipment. No. 46 rear jockey arch. POGW-133 steel flat tire gauge wheels. Delayed lift valve. Tool equipment as listed in specifications. Shields.

Special Equipment

No. 16 spring trips ($1\frac{1}{4}$ -in. standards). POGW-132 "V" tire gauge wheels. No. 7 moldboard hiller attachment. No. 4 weeder mulcher attachment ($7\frac{1}{2}$ -ft.) No. 5 weeder mulcher attachment (10-ft.). No. 7 rotary weeder attachment. No. 88 spring tooth attachment for front section. Adjustable clamp (28 139-B) for tilting spring trip standard (for Nos. 16, 19 and 76 tool equipment). Nos. 96 and 97 high-speed covered-type shields.

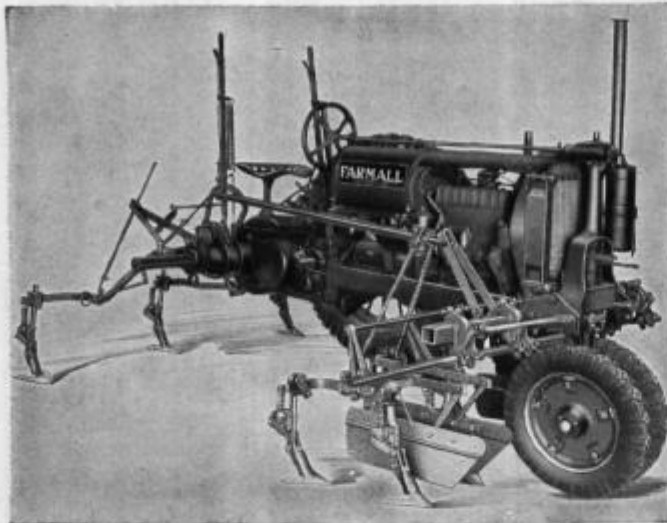
Specifications

Cult. No.	Tool Equip. No.	Type of Lift	Row Spacing (inches)	Front Section	Rear Section	Net Weight (Approx.)
448 G	16	Power, Delayed	36-42	Square tool bars with 12 spring trips, 10 (6045-B) 8-in. sweeps and 2 (6047-B) 12-in. sweeps.....	7 spring trips with 8-in. sweeps.....	1555
448-G	17	Power, Delayed	36-42	Pipe tool bars with 12 spring trips, 10 (6106-B) 8-in. sweeps and 2 (6108-B) 12-in. sweeps.....	7 spring trips with 8-in. sweeps.....	1645
448-G	19	Power, Delayed	36-42	Square tool bars with 18 spring trips, 16 (6045-B) 8-in. sweeps and 2 (6047-B) 12-in. sweeps.....	7 spring trips with 8-in. sweeps.....	1660
448-G	76	Power, Delayed	36-42	Square tool bars with 12 spring trips, 10 (6045-B) 8-in. sweeps and 2 (6047-B) 12-in. sweeps.....	7 spring trips with 8-in. sweeps.....	1573



No. 238-H Two-Row Cultivator

(For Farmalls F-12 and F-14)



Illust. 1—No. 238-H cultivator (right rear tractor wheel removed) with No. 10 tool equipment mounted on an F-12 Farmall. Cultivator is the hand-lift type.

The No. 238-H, parallel-gang, high-speed, steady-running cultivator for the Farmalls F-12 and F-14, is adaptable to the cultivation of corn, cotton, potatoes, and other crops planted in rows spaced from 32 to 42 in. apart.

The cultivator gangs are connected by parallel linkage to square pipes which are attached to the front side of the tractor frame. The parallel floating linkage keeps the cultivator tool bars level so that the shovels or sweeps, together with the shields, are always in the right working relation to the soil regardless of the depth of cultivation.

The No. 238-H is available in two types: (1) with hand lever, (2) with connecting parts for tractors equipped with power lift.

Regular Equipment

No. 68 shields are regular with Nos. 10, 12, and 30 tool equipment.

Special Equipment

No. 76 shields for No. 54 tool equipment. No. 21 disk hiller. No. 91 spring tooth. Potato hiller. No. 7 tool bar. No. 80 shields for use with No. 7 tool bar. Vegetable tools.



Illust. 2—Rear section of No. 238-H cultivator with No. 10 and 30 tool equipment.

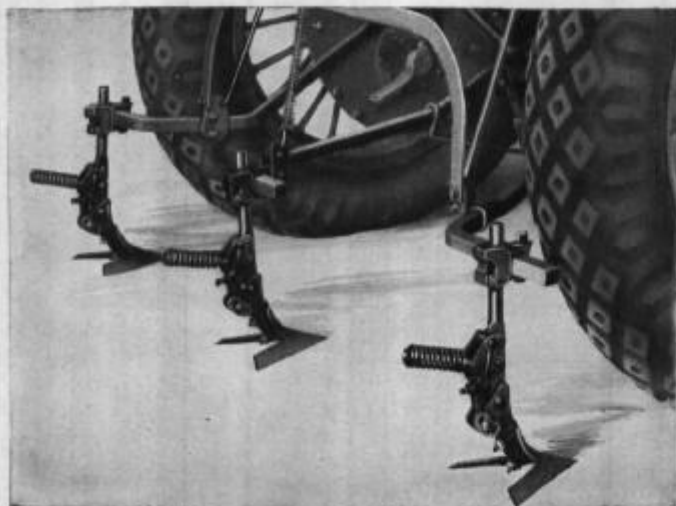
Specifications

Cult. No.	Tool Equip. No.	Type of Lift	Row Spacing (Inches)	Front Section	Rear Section	Net Weight. (Approx.) Lb.
238-H	10	Hand	32-42	8 spring trips with 4 10-in. half sweeps and 4 (6106 B) 8-in. sweeps.....	3 spring trips with (6107 B) 10-in. sweeps	765
		Power	32-42	8 spring trips with 4 10-in. half sweeps and 4 (6106 B) 8-in. sweeps.....	3 spring trips with (6107 B) 10-in. sweeps	760
238-H	12	Hand	32-42	9 spring trips with 4 10-in. half sweeps and 4 (6106 B) 8-in. sweeps and 1 (6107 B) 10-in. sweeps.....	2 spring trips with (6107 B) 10-in. sweeps	718
		Power	32-42	9 spring trips with 4 10-in. half sweeps and 4 (6106 B) 8-in. sweeps and 1 (6107 B) 10-in. sweeps.....	2 spring trips with (6107 B) 10-in. sweeps	713
238-H	30	Hand	32-42	8 spring trips with (6106 B) 8-in. sweeps....	3 spring trips with (6107 B) 10-in. sweeps	760
238-H	54	Power	32-42	8 spring trips with (6106 B) 8-in. sweeps....	3 spring trips with (6107 B) 10-in. sweeps	755
		Hand	32-42	8 spring teeth with (25332 B) 2 x 8-in. double point shovels.....	3 spring teeth with (25332 B) 2 x 8-in. double point shovels.....	746
		Power	32-42	8 spring teeth with (25332 B) 2 x 8-in. double point shovels.....	3 spring teeth with (25332 B) 2 x 8-in. double point shovels.....	744



Nos. 238-G and N-238-G Farmall Cultivators

(For Standard and Narrow-Tread F-20 and F-30 Tractors)



Illust. 1 — Rear section of the No. 238-G cultivator with No. 10 and No. 30 tool equipment (mechanical lift type).

The No. 238-G and the N-238-G parallel-gang, high-speed, steady-running cultivators for the Farmalls F-20 and F-30, regular and narrow tread, are adaptable to the cultivation of corn, cotton, potatoes, and other crops planted in rows spaced from 36 to 48 inches apart.

The cultivator gangs are connected by parallel linkage to square pipes which are attached to the front side of the tractor frame. The parallel floating linkage keeps the cultivator tool bars level so that the shovels or sweeps, together with the shields, are always in the right working relation to the soil regardless of the depth of cultivation.

The No. 238-G is available in three types: (1) with hand-lift levers, (2) with connecting parts for tractors equipped with mechanical power lift, (3) with connecting parts for tractors equipped with hydraulic "Lift-All".

Specifications

Cult. No.	Tool Equip. No.	Type of Lift	Row Spacing (Inches)	Front Section	Rear Section	Net Weight (Approx.) Lb.
238-G for F-20	10	Hand	36-42	8 spring trips with 4 10-in. half sweeps and 4 (6106 B) 8-in. sweeps.....	3 spring trips with (6107 B) 10-in. sweeps	974
	10	Power, Single	36-42	"	"	951
	10	Power, Double	36-42	"	"	1,097
	10	Power, Hydraulic*	36-42	"	"	1,081
238-G for F-30	10	Hand	36-42	"	"	975
	10	Power, Single	36-42	"	"	954
	10	Power, Double	36-42	"	"	1,029
	10	Power, Hydraulic*	36-42	"	"	1,015
N-238-G for N.T. F-20	10	Hand	36-42	"	"	942
	10	Power, Single	36-42	"	"	964
N-238-G for N.T. F-30	10	Hand	36-42	"	"	942
	10	Power, Single	36-42	"	"	975
	12	Hand	36-42	9 spring trips with 4 10-in. half sweeps, 4 (6106 B) 8-in. sweeps and 1 (6107 B) 10-in. sweep.....	2 spring trips with (6107 B) 10-in. sweeps	917
238-G for F-20	12	Power, Single	36-42	"	"	894
	12	Power, Double	36-42	"	"	1,039
	12	Power, Hydraulic*	36-42	"	"	1,024
238-G for F-30	12	Hand	36-42	"	"	917
	12	Power, Single	36-42	"	"	897
	12	Power, Double	36-42	"	"	972
	12	Power, Hydraulic*	36-42	"	"	957
238-G for F-20	14	Hand	36-42	11 spring trips with 4 10-in. half sweeps, 6 (6106 B) 8-in. sweeps and 1 (6107 B) 10-in. sweep.....	None	752
	14	Power, Single or Double	36-42	"	"	753
	14	Power, Hydraulic*	36-42	"	"	883
238-G for F-30	14	Hand	36-42	"	"	752
	14	Power, Single or Double	36-42	"	"	756
	14	Power, Hydraulic*	36-42	"	"	744
238-G for F-20	30	Hand	36-42	8 spring trips with (6106 B) 8-in. sweeps.....	3 spring trips with (6107 B) 10-in. sweeps	998
	30	Power, Single	36-42	8 spring trips with (6106 B) 8-in. sweeps.....	"	976
	30	Power, Double	36-42	8 spring trips with (6106 B) 8-in. sweeps.....	"	1,121
	30	Power, Hydraulic*	36-42	8 spring trips with (6106 B) 8-in. sweeps.....	"	1,105
238-G for F-30	30	Hand	36-42	8 spring trips with (6106 B) 8-in. sweeps.....	"	999
	30	Power, Single	36-42	8 spring trips with (6106 B) 8-in. sweeps.....	"	978
	30	Power, Double	36-42	8 spring trips with (6106 B) 8-in. sweeps.....	"	1,053
	30	Power, Hydraulic*	36-42	8 spring trips with (6106 B) 8-in. sweeps.....	"	1,037

*Tractor must be equipped with Hydraulic Type Power Lift



Nos. 238-G and N-238-G Farmall Cultivators

(For Standard and Narrow-Tread F-20 and F-30 Tractors)

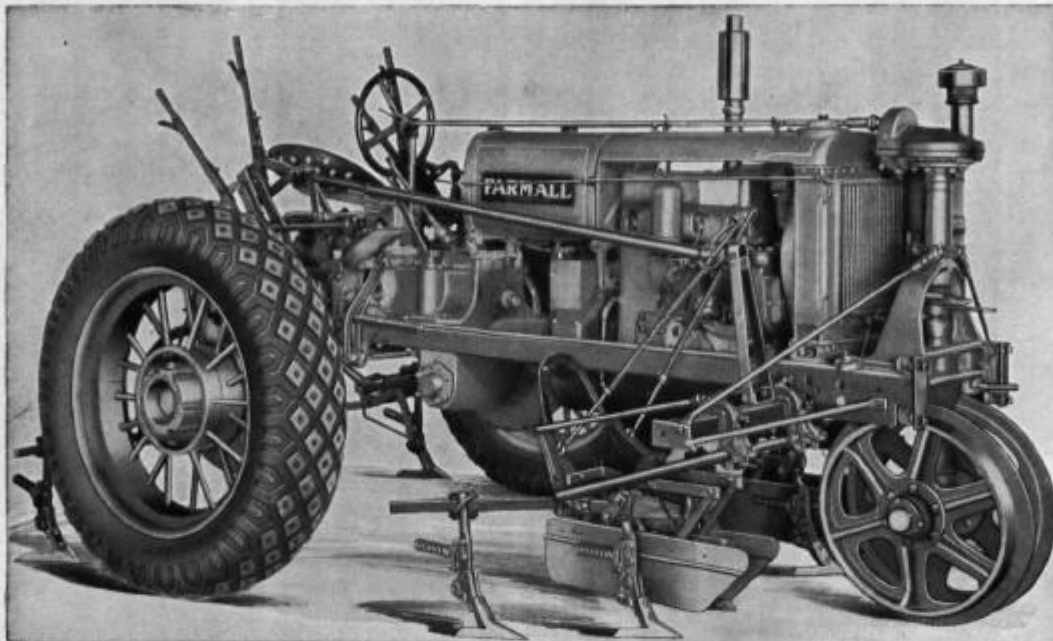
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Regular Equipment

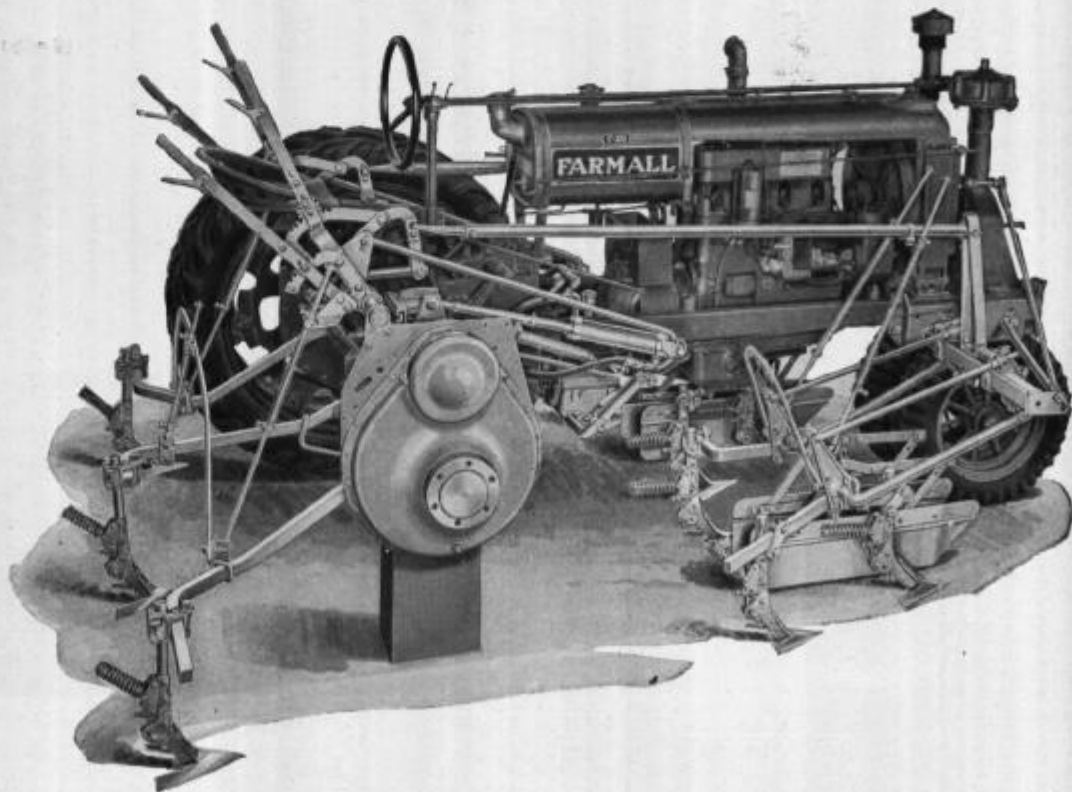
Front jockey arch. Rear jockey arch is regular with Nos. 10 and 30 tool equipment.

Special Equipment

No. 91 spring tooth. Nos. 14, 20, and 26 disk hillers. Peanut digger. No. 1 potato hiller. No. 7 tool-bar. No. 80 shields. Vegetable tools.



Illust. 1 — No. 238-G cultivator with No. 10 tool equipment on an F-20 Farmall equipped with mechanical power lift.



Illust. 2 — No. 238-G cultivator with No. 10 tool equipment mounted on an F-20 Farmall equipped with hydraulic Lift-all. This cultivator is also available with hand-lift levers.



INTERNATIONAL HARVESTER



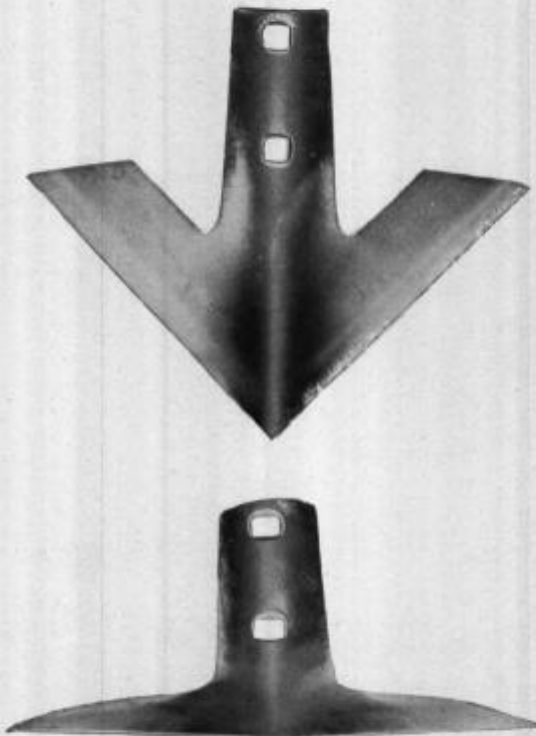
Cultivator Sweeps

International Harvester cultivator sweeps and shovels are made from select quality high-carbon steel. Factory-sharpened cutting edges stay sharp longer by natural wear. Sweeps skim through the soil without throwing excessive dirt. The wide variety of IH shovels are used for deep cultivation and penetrating hard, packed soil.

Sweeps should be selected from the complete line of IH types for high-speed weed control.

The following are lists of types and sizes of sweeps and shovels that are available to make up a complete set of ground tools for any cultivator with slotted shanks.

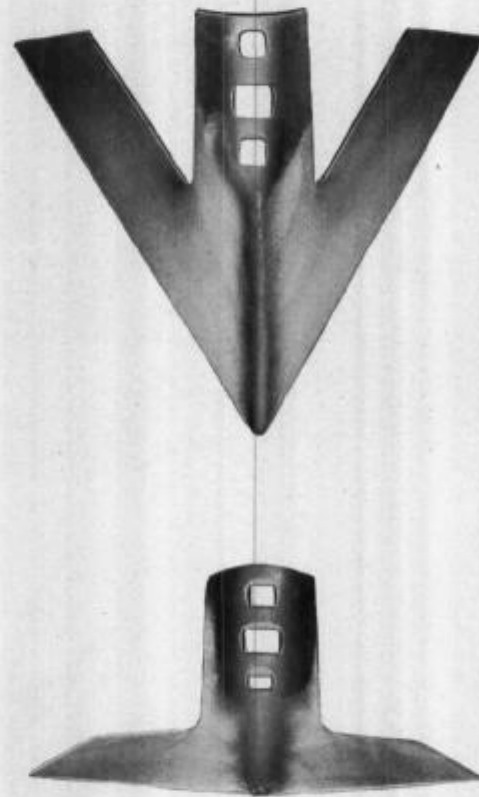
- Tough high-carbon steel, control-cooled for extra strength and wear.
- The factory-sharpened cutting edge stays sharp longer by natural wear.
- Wide variety of types and sizes to meet any cultivating problem.



Hi-Speed Sweeps

Part Number	Size	Thickness
6098 B	10-in. full	$\frac{3}{16}$ -in.
6099 B	12-in. full	$\frac{3}{16}$ -in.
6100 B	10-in. half R.H.	$\frac{3}{16}$ -in.
6101 B	10-in. half L.H.	$\frac{3}{16}$ -in.
6102 B	12-in. half R.H.	$\frac{3}{16}$ -in.
6103 B	12-in. half L.H.	$\frac{3}{16}$ -in.
6126 B	8-in. half R.H.	$\frac{3}{16}$ -in.
6127 B	8-in. half L.H.	$\frac{3}{16}$ -in.
6128 B	8-in. full	$\frac{3}{16}$ -in.

Hi-Speed sweeps are designed for smooth cultivation at high speed. The low pitch wing and low crown prevents throwing the soil over the growing crop. The wide angle of the sweep cutting edge assures cutting off all the grass and weeds.



McGregor Sweeps

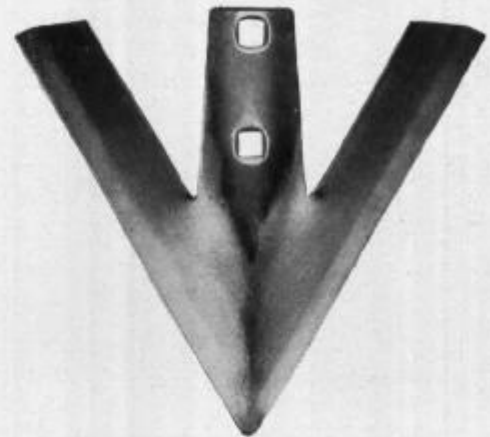
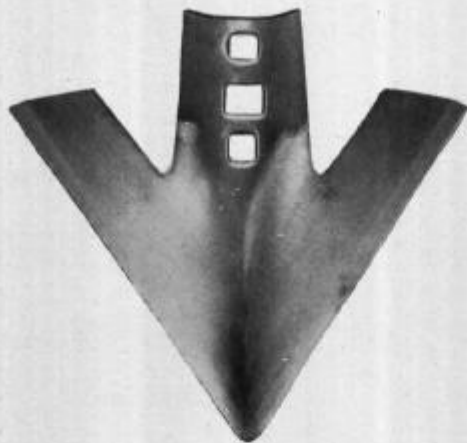
Part Number	Size	Thickness
6040 B	6-in. full	$\frac{3}{16}$ -in.
6041 B	8-in. full	$\frac{3}{16}$ -in.
6042 B	10-in. full	$\frac{3}{16}$ -in.
6043 B	12-in. full	$\frac{3}{16}$ -in.
6050 B	15-in. full	$\frac{1}{4}$ -in.

McGregor sweeps are designed for slow speed cultivation. The high pitch wing and high crown cuts the weeds and grass when cultivating at slow speed.



Cultivator Sweeps

(Continued)



Joyce Sweeps

Part Number	Size	Thickness
6044 B	6-in. full	$\frac{3}{16}$ -in.
6045 B	8-in. full	$\frac{3}{16}$ -in.
6046 B	10-in. full	$\frac{3}{16}$ -in.
6047 B	12-in. full	$\frac{3}{16}$ -in.
6048 B	15-in. full	$\frac{1}{4}$ -in.
6049 B	18-in. full	$\frac{1}{4}$ -in.
6066 B	8-in. half R.H.	$\frac{3}{16}$ -in.
6067 B	8-in. half L.H.	$\frac{3}{16}$ -in.
6074 B	6-in. half R.H.	$\frac{3}{16}$ -in.
6075 B	6-in. half L.H.	$\frac{3}{16}$ -in.
6076 B	10-in. half R.H.	$\frac{3}{16}$ -in.
6077 B	10-in. half L.H.	$\frac{3}{16}$ -in.
6142 B	6-in. full	$\frac{1}{4}$ -in.
6143 B	8-in. full	$\frac{1}{4}$ -in.
6144 B	10-in. full	$\frac{1}{4}$ -in.
6145 B	12-in. full	$\frac{1}{4}$ -in.

Joyce sweeps are designed for clean cultivation at medium speed. The wing has a medium pitch. The crown is medium high, and wide; this makes the sweep extra sturdy for cultivating in soil that has stones and other obstacles.

2-Hole Texas Sweeps

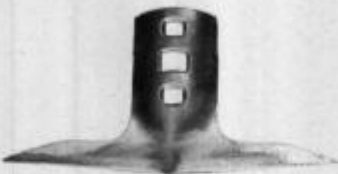
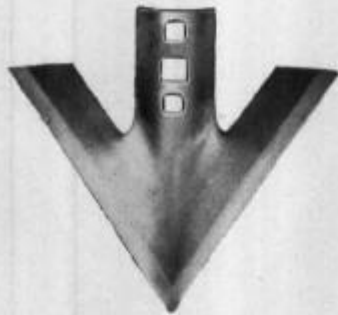
Part Number	Size	Thickness
6104 B	4-in. full	$\frac{5}{32}$ -in.
6105 B	6-in. full	$\frac{5}{32}$ -in.
6106 B	8-in. full	$\frac{3}{16}$ -in.
6107 B	10-in. full	$\frac{3}{16}$ -in.
6108 B	12-in. full	$\frac{3}{16}$ -in.
511 536 R1	8-in. half R.H.	$\frac{3}{16}$ -in.
511 537 R1	8-in. half L.H.	$\frac{3}{16}$ -in.
511 538 R1	10-in. half R.H.	$\frac{3}{16}$ -in.
511 539 R1	10-in. half L.H.	$\frac{3}{16}$ -in.

2-Hole Texas sweeps are designed for smooth cultivation at high speed in loose soil. The low pitch wing, narrow angle cutting edge and low crown clips the weeds and grass and does not clog with roots and stems in trashy soil.



Cultivator Sweeps

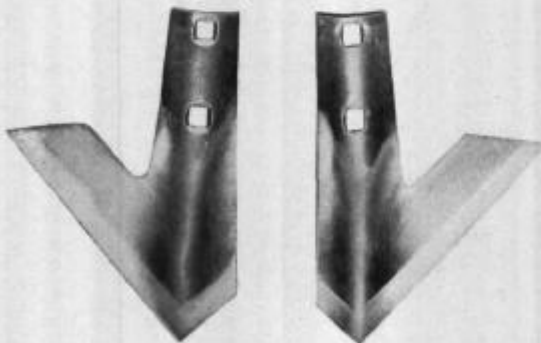
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3-Hole Texas Sweeps

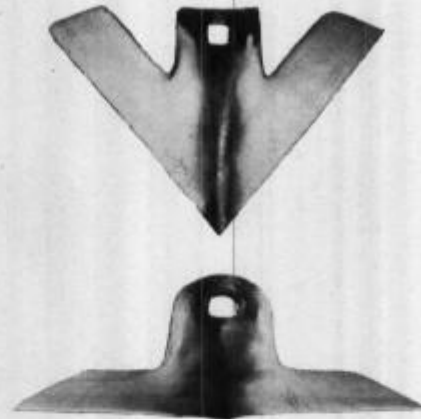
Part Number	Size	Thickness
6078 BA	6-in. full	$\frac{5}{32}$ -in.
6079 BB	8-in. full	$\frac{3}{16}$ -in.
6080 BB	10-in. full	$\frac{3}{16}$ -in.
6081 BB	12-in. full	$\frac{3}{16}$ -in.
6083 BB	4-in. full	$\frac{5}{32}$ -in.
6084 BB	15-in. full	$\frac{1}{4}$ -in.
6085 BB	16-in. full	$\frac{1}{4}$ -in.
6092 B	18-in. full	$\frac{1}{4}$ -in.

The **3-Hole Texas** sweep is designed for cultivation in heavy, firm soil at medium cultivating speed. It has a medium angle cutting edge and a wide, medium high crown which makes it very sturdy for rugged cultivating conditions.



Half Sweeps

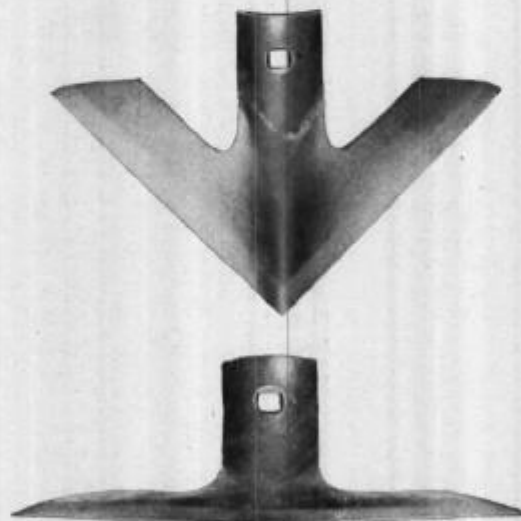
Half Sweeps are used to cultivate close to the row crops, to kill the weeds and grass and not disturb the plant roots.



Regular Sweeps

Part Number	Size	Thickness
3190 B	6 $\frac{1}{2}$ -in. full	$\frac{3}{16}$ -in.
3191 B	8 $\frac{1}{2}$ -in. full	$\frac{3}{16}$ -in.
3192 B	10 $\frac{1}{2}$ -in. full	$\frac{3}{16}$ -in.
3193 BA	8-in. half R.H.	$\frac{3}{16}$ -in.
3194 BA	8-in. half L.H.	$\frac{3}{16}$ -in.

The **Regular** sweep is used for general purpose cultivation at medium speed.



Bindweed Sweeps

Part Number	Size	Thickness
6068 B	12-in. full	$\frac{3}{16}$ -in.
6070 B	15-in. full	$\frac{3}{16}$ -in.
6072 B	18-in. full	$\frac{3}{16}$ -in.

Bindweed sweeps are made with a low crown, low pitch wing and wide angle cutting edge especially for bindweed eradication. Can be used for cultivating at high speed.



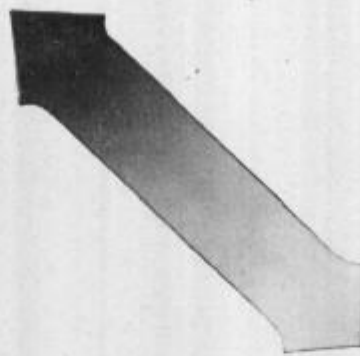
Cultivator Shovels



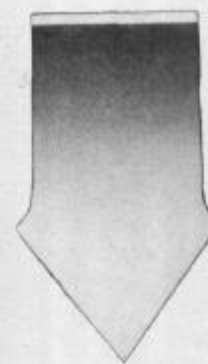
SPEARHEAD



TWO-PIECE



DOUBLE-POINT



SINGLE-POINT

- Durable high-carbon steel.
- Reinforced points for extra wear.
- Types and sizes for any cultivating need.
- Factory-sharpened for keen cutting edge.

Spearhead

Part Number	Size	Steel
2852 BB	5 x 8-in.	Soft center
2854 BB	6 x 8½-in.	Soft center
3849 BB	3½ x 7-in.	Solid
3851 BB	5 x 8-in.	Solid
3853 BB	6 x 8½-in.	Solid
3855 BB	7 x 9½-in.	Solid

The **Spearhead** type are extra durable reinforced single-point shovels.

Two-Piece

Part Number	Size	Steel
15649 B	4½-in.	Soft center
15650 B	5¼-in.	Soft center
27170 B	6-in.	Solid
27172 B	4½-in.	Solid
27174 B	5¼-in.	Solid

The **Two-piece** shovel is similar to the spearhead type but has a replaceable point.

Single-Point

Part Number	Size	Steel
2629 BD	3½ x 9-in.	Solid
2635 BB	5 x 9½-in.	Solid
2638 BB	5 x 9½-in.	Solid, R.H. Twist
2639 BB	5 x 9½-in.	Solid, L.H. Twist
2862 BB	2½ x 9-in.	Solid
2864 BB	2 x 9-in.	Solid
3750 BB	3 x 9-in.	Solid
3752 BB	2½ x 11-in.	Solid

The **Single-point** spearhead-type shovel with reinforced point and high crown is used principally on horse-drawn cultivators.

Double-Point

Part Number	Size	Steel
25700 B	2 x 11-in.	Solid
25702 B	2½ x 11-in.	Solid
25704 B	3 x 11-in.	Solid
26013 B	2 x 8-in.	Solid
PO 14329	1½ x 11-in.	Solid

The **Double-point** shovel is a "bull tongue" reversible type. It is used for deep penetration cultivation where soil conditions make it necessary.





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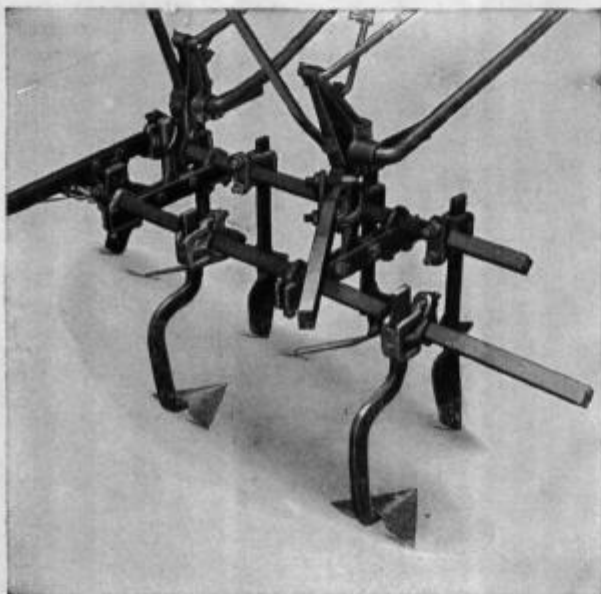


Beet, Bean and Vegetable Tool Bar Attachments

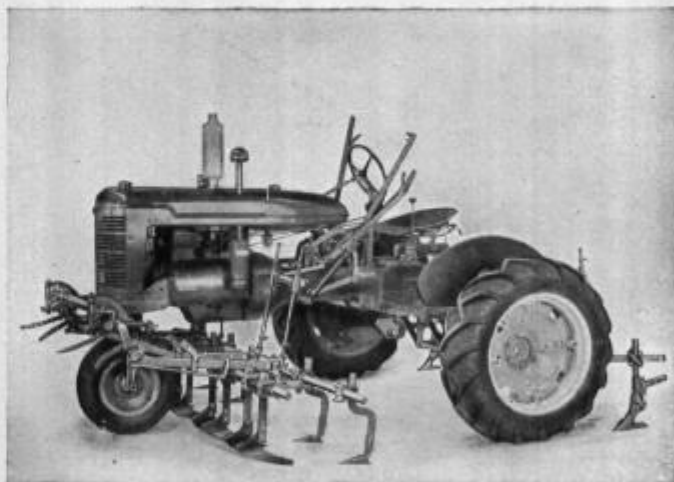
(For Farmall Cultivators)

Tool bar attachments are available for Farmall cultivators to convert them to beet, bean and vegetable cultivators. They will work from 1 to 6 rows depending on the row spacing and arrangement of ground tools. Tool attaching clamps are supplied with the attachment as shown in Specifications. Choice of ground working tools are listed on pages 250-J to 250-N (must be ordered special).

The No. 7 and No. 11 tool bar attachments for the 2-row Farmall cultivators consist of two independent



Illust. 1—The No. 7 tool bar is shown here on the HM-238 cultivator.



Illust. 2—The No. 7 tool bar attachment on the B-221 converts it quickly and easily into a first class vegetable cultivator.

units. Each unit has two $1\frac{1}{4}$ -in. square bars connected in parallel. These units attach to the cultivator tool bars in place of the standards.

The No. 8 tool bar attachment for the 1-row Farmall cultivators consist of 1 unit. This unit has 2 long square bars connected in parallel and attached to the parallel linkage of the cultivator.

The No. 9 tool bar attachment consists of 4 units and each unit consists of 2 parallel mounted square bars that attach to each of the cultivator gang heads.

The parallel bars extend crosswise of the row and permit practically any arrangement of ground working tools.

Specifications

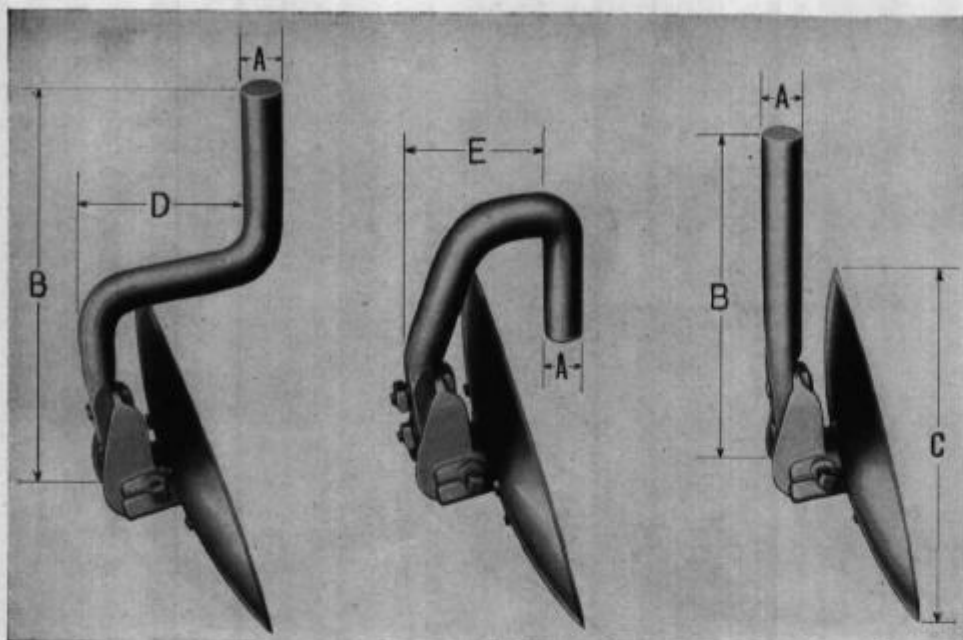
Attachment No.	Description	Net Weight (Approx.)
7	For front section of B-221 and BN-221 Farmall Cultivators—includes ten tool clamps* ($1\frac{1}{4}$ -in. square tool bars)	162 lb.
7	For front section of B-236, B-238 and 238-H Farmall Cultivators—includes ten tool clamps* ($1\frac{1}{4}$ -in. square tool bars)	157 lb.
7	For front section of HM-221 Farmall Cultivator—includes ten tool clamps* ($1\frac{1}{4}$ -in. square tool bars)	163 lb.
7	For front section of HM-236, HM-238 and 238-G Farmall Cultivators—includes ten tool clamps* ($1\frac{1}{4}$ -in. square tool bars)	162 lb.
8	With 101-in. long tool bar for front section of A-136 and A-138 Farmall Cultivators—includes thirteen tool clamps*	186 lb.
8	With 120-in. long tool bar for front section of A-136 and A-138 Farmall Cultivators—includes thirteen tool clamps*	221 lb.
9	For front section of HM-242 Farmall Cultivator—includes eighteen tool clamps*	156 lb.
11	For front section of HM-240 Farmall Cultivator—includes ten tool clamps*	159 lb.
"R" Type	Rear section—72-in. long single tool bar—for A-136 and A-138 <i>hand lift</i> Farmall Cultivators—includes three tool clamps*	154 lb.
"R" Type	Rear section—72-in. long single tool bar—for A-136 and A-138 <i>power lift</i> Farmall Cultivators—includes three tool clamps*	134 lb.

* Tool clamps 28309-BA, 33200-BB or 29601-BA as ordered. See page 250-J.



Disk Hiller Attachments

(For Farmall Cultivators)



Illust. 1—Three types of disk hillers (left to right: offset standard, special offset standard, and straight standard) which can be used on cultivators in place of front standards. For dimensions indicated here by letter, see specifications at the bottom of the page.

Disk hillers are used next to the row in place of the front standard. They may be set to throw the dirt toward the plant row or be set to throw the dirt away from the row for the barring-off operation.

There are three general types of disk hillers, the only difference being in the standards—namely: (1) straight standard, (2) offset standard, (3) special offset with the end of the standard turned down. Disk hiller standards are available in various diameters to fit the regular standard clamps.

Illust. 2 — (Right) Disk hillers mounted in place of front standards on the HM-238 Farmall cultivators set to throw the dirt away from the plants.



Specifications

(Refer to Illust. 1 for significance of letters shown in column headings below).

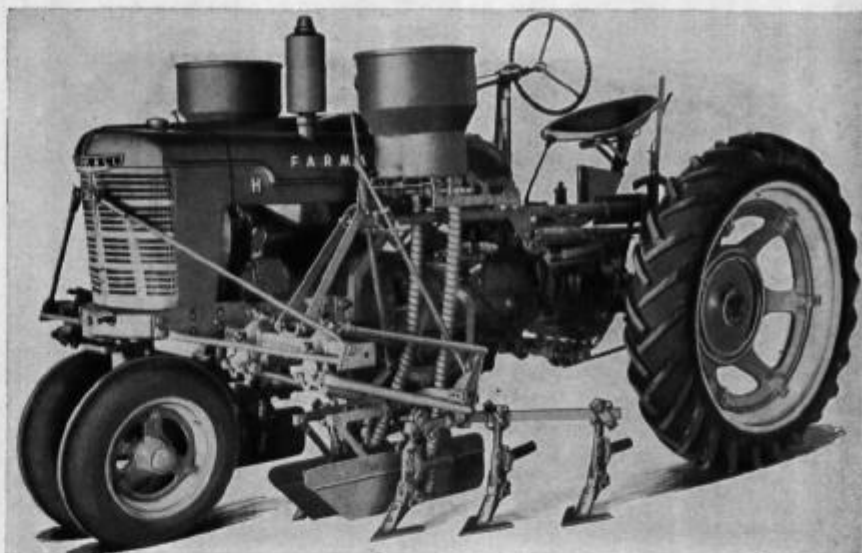
Model No. Disk Hiller (Pairs)	Diameter of Standard "A" (Inches)	Length of Standard "B" (Inches)	Diameter of Disk "C" (Inches)	Length of Offset "D" (Inches)	Special Offset "E" (Inches)	Net Weight (Approx.)
2	17 ¹ / ₁₆	19	13	6	...	40 lb.
10	17 ¹ / ₁₆	11 ¹ / ₄	12	Straight	...	28 lb.
14	13 ¹ / ₄	12 ¹ / ₄	13	6	...	30 lb.
19	13 ¹ / ₄	13 ¹ / ₄	16	Straight	...	34 lb.
20	13 ¹ / ₄	19	13	6	...	34 lb.
21	13 ¹ / ₄	10 ¹ / ₂	13	6 ¹ / ₂	...	30 lb.
22	13 ¹ / ₄	11	13	Straight	...	28 lb.
23	13 ¹ / ₄	Special	13	...	4	30 lb.
24	13 ¹ / ₄	10 ¹ / ₄	13	6	...	30 lb.



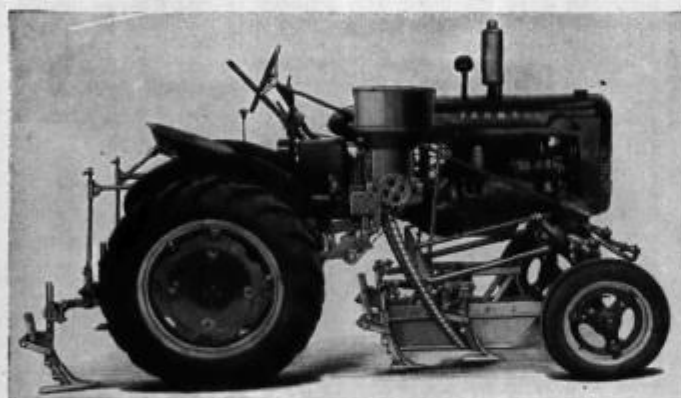
Fertilizer Attachments for Farmall Cultivators

The fertilizer attachments listed in the accompanying Specifications are complete with parts necessary for the side dressing of row crops during the cultivating operation. Additional parts must be ordered if the attachments are to be used with the 96, 99 and 100-series cotton and corn planters. For this information see Planter Section.

Each fertilizer hopper has two star-feed wheels, each with its own opening and feed tube. The fertilizer feed tubes are attached to the inside cultivator shovels on each row. When the operator



Illust. 1—HM-47-C fertilizer attachment mounted on the HM-240 Farmall Cultivator.



Illust. 2—A-44-C fertilizer attachment mounted on the A-138 Farmall cultivator.

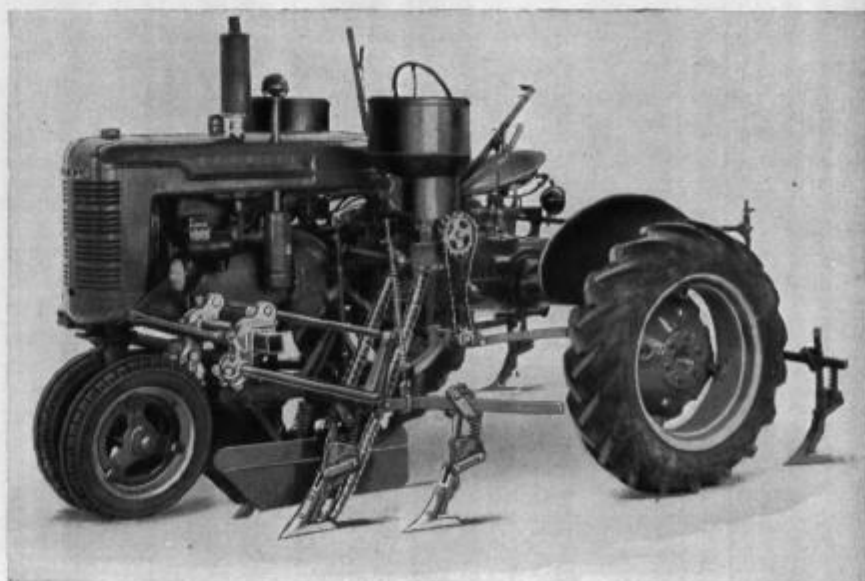
wishes to dress one side of the row only, the feed tube not to be used is closed with a shut-off valve. A regulator is provided which accurately controls the amount of fertilizer deposited.

The fertilizer hopper for cultivators used on Farmalls H, M and MD are chain driven from a sprocket on the rear axle and for cultivators used on Farmalls A, B, and BN the drive is from a sprocket which attaches to the inside end of the rear axle. A clutch in the hopper drive automatically disengages when the cultivator gangs are raised and engages again as they are lowered.

A fertilizer agitator is available on special order.

Specifications

Fertilizer Attachment	Farmall Cultivator	Net Weight (Approx.)
A-44-C	A-136, A-138.....	126 lb.
AV-44-C	AV-138.....	126 lb.
A-48-C	A-437.....	248 lb.
B-44-C	B-221, B-236, B-238.....	221 lb.
BN-44-C	BN-221, BN-238.....	224 lb.
B-33-K	B-435.....	244 lb.
HM-44-C	HM-221, HM-236, and HM-238 with No. 10 tool equipment. HM-240 with No. 11 tool equipment.....	295 lb.
HM-47-C	HM-238, HM-240.....	228 lb.

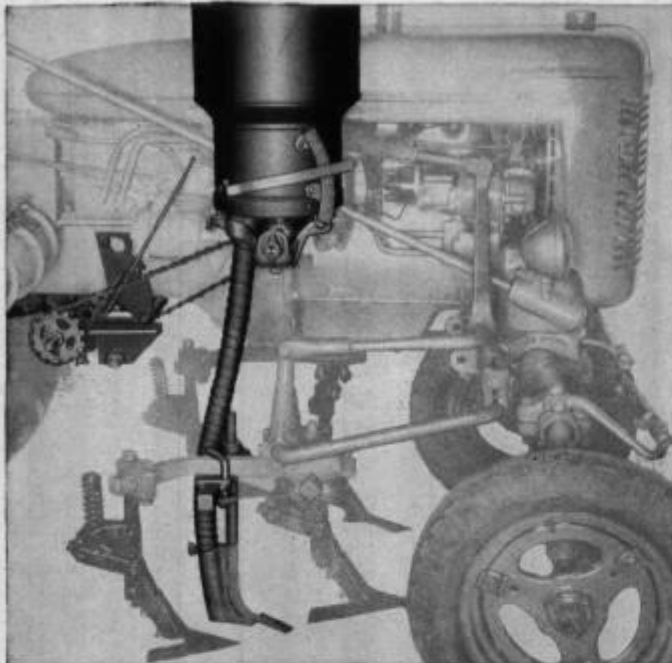


Illust. 3—B-44-C fertilizer attachment mounted on the B-238 Farmall cultivator.

Farmall Super-A and C Tractors

Fertilizer Attachments

For A-144, AV-144 and C-244 Cultivators



Illust. 1 — A-53-C fertilizer attachment and 514 303 R91 deep applicator attachment mounted on A-144 cultivator. Deep applicator is not part of fertilizer attachment.

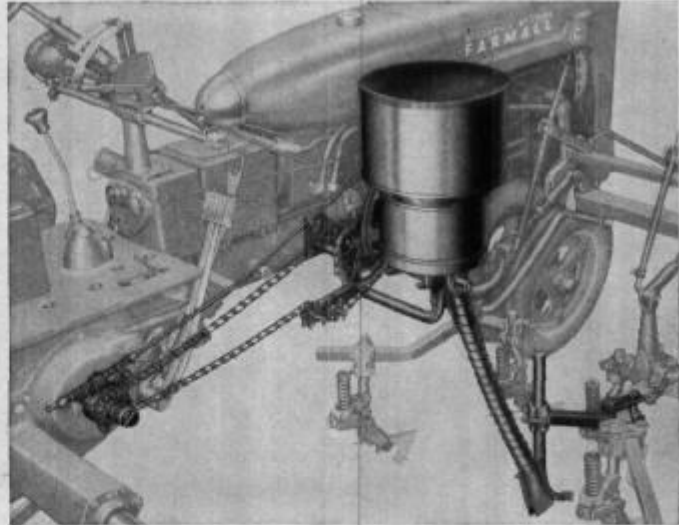
Fertilizer attachments are available to side-dress the crop when cultivating. The attachments are basically the same in design. They consist of hoppers with flexible steel tubes, hopper support and mounting bracket with drive shaft, and the drive from the seed plate drive attachment on the tractor. If the tractor is not equipped with the seed plate drive attachment it must be ordered.

The hopper drive includes a clutch which is connected to the Farmall touch-control power arms. As the cultivator is lowered and raised the hopper feed shaft is started and stopped.

The fertilizer attachments for the A and AV-144 cultivators includes the same countershaft assembly as supplied for the A-170, 171, 172 and AV-170 cotton and corn planters. The C-244 cultivator includes a clutch and sprocket assembly which attaches to the tractor seed plate drive stub shaft.

Fertilizer Applicator

Two methods of fertilizer application are possible, either the flexible steel fertilizer tube can be attached to the rear of the front cultivator standard or a deep fertilizer applicator attachment can be used. The attachment consists of a 1¼-inch round standard to which is welded a diamond point shovel and fertilizer spout which is attached to the cultivator tool bar. The deep applicator is adjustable up and down and sideways so it is possible to place the fertilizer in the root zone



Illust. 2 — No. 310 fertilizer attachment mounted on C-244 cultivator. It includes the diamond point deep applicator which is adjustable so that the fertilizer can be placed at any depth or distance from the plant desired

where it is readily available for the plants and does not stimulate surface weed growth.

The deep applicator attachment must be ordered as special equipment for the A and AV-144 cultivator and is supplied as regular equipment with the C-244 cultivator fertilizer attachment.

Hopper

The hopper is the standard star-feed type with single discharge opening which delivers various types of fertilizer in a constant even stream. It is the same as used on row-crop planter fertilizer attachments. If a customer has a planter with fertilizer equipment having star-feed type hoppers he can use these.

Specifications

Cultivator	Fertilizer Attachment	Weight Approx. lbs.
A-144	A-53-C Fertilizer attachment complete	.....
	A-53-C Fertilizer attachment and 514 303 R91 Deep Fertilizer applicator attachment. ....	.....
AV-144	AV-53-C Fertilizer attachment complete	.....
	AV-53-C Fertilizer attachment and 514 303 R91 Deep Fertilizer applicator attachment. ....	.....
C-244	No. 310 Fertilizer attachment includes 620 817 R91 Deep Fertilizer applicator attachment. ....	.....
	No. 311 Fertilizer attachment less hoppers includes 620 817 R91 Deep Fertilizer applicator attachment. ....	.....

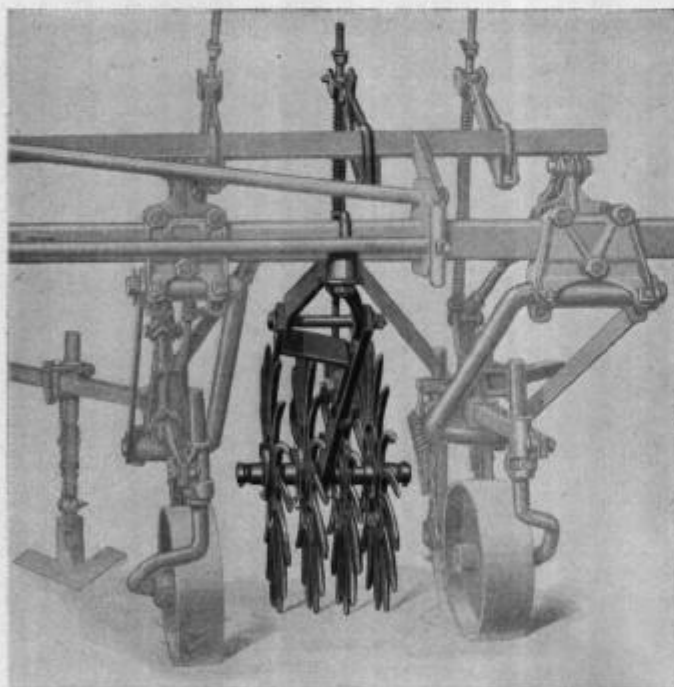


Rotary Weeder Attachments

(For Farmall Cultivators)

- Destroy small weeds within the row.
- Ideal for crops planted on the contour.
- Permit high-speed cultivation while the plants are still small.
- Free-floating—mounted independently of the cultivator gangs.

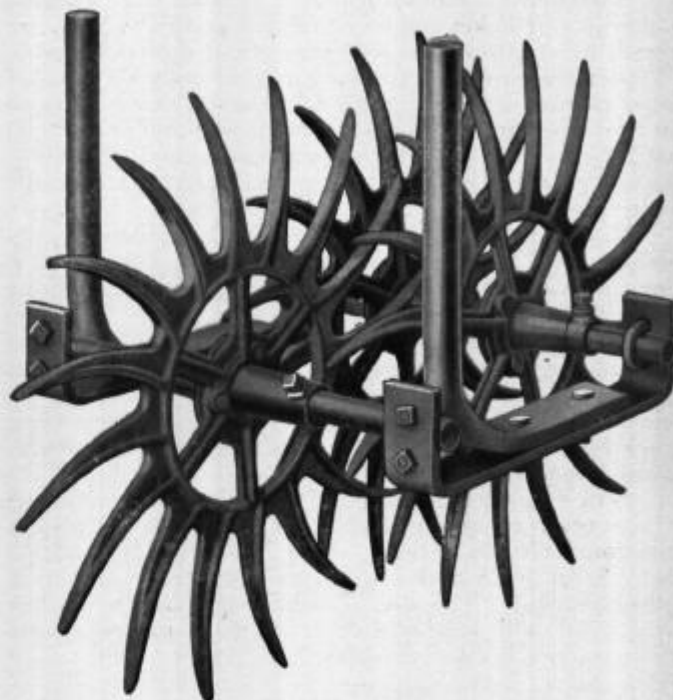
Rotary weeder attachments make it possible to do with-in-the-row cultivation in any field—on the contour, on the flat, on beds—in straight rows or in listed crops. With this flexible equipment the operator can go into the field as soon as the seed has sprouted and the rows have become visible. It is even possible to cultivate blind if the seeded row is faintly discernable. The tines of the rotary weeder wheels cultivate closely in and around the tender young plants and destroy the tiny weed sprouts before they have a chance to put down tap roots.



Illust. 1 — Rotary weeder No. 7. These simple, easily attached units do an excellent job in small corn or cotton. The rotary hoe spider wheels are spaced $2\frac{1}{2}$ inches apart.

Specifications

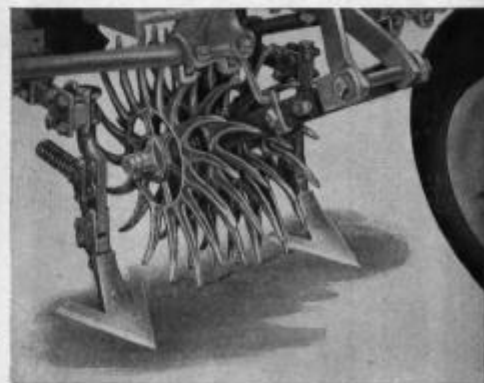
Weeder No.	Description	Net Weight (Approx.)
No. 1	For cultivators with clamps for $1\frac{1}{4}$ -in. standards (long)	69 lb.
No. 6	For cultivators with clamps for $1\frac{1}{4}$ -in. standards (short)	62 lb.
No. 7	For M-448 cultivator.....	78 lb.
No. 9	For HM-238, HM-240 cultivators.....	74 lb.



Illust. 2 — Rotary weeder No. 1. The No. 6 Rotary weeder is the same as the No. 1 except that the No. 6 has slightly shorter standards.

Cultivation speed need no longer be cut because the plants are small. Dirt clods thrown toward the row by the cultivator shovels are broken up by the rotary wheels. Just enough fine dirt sifts through to act as a strangling agent on the small weeds. As the plants get bigger the inside wheels may be removed and spacers inserted to afford additional clearance.

The No. 7 and 9 units have individual beams which float independently of the cultivator gangs. Cultivator shovels can thus be set to any desired depth which leaves the rotary wheels free to follow the row at a gentle, uniform pressure.



Illust. 3 — Rotary weeder No. 9. This illustration shows the attachment mounted on an HM-240 Farmall Cultivator.



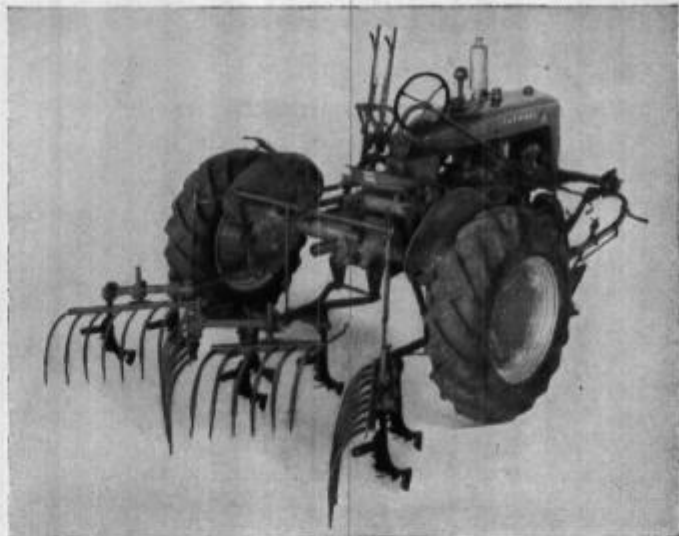
Weeder-Mulcher Attachments

(For Farmall Cultivators)

A weeder-mulcher attachment, used behind a Farmall cultivator, mulches and levels the soil and kills the young weeds before they have a chance to put down tap roots. Weeder-mulchers are especially useful for working drilled rows planted on the contour and also do excellent work in check-row crops. They are made in 4-unit and single-unit types, as shown in the accompanying illustrations, and are attached to the rear section of power lift cultivators.

Nos. 2 and 3 weeder-mulchers are 4-unit attachments designed for working between the rows. The No. 2 is for use with Farmall-B cultivator rear sections having 1 x 1½-inch rectangular gang beams. The No. 3 is for Farmalls-H and M cultivator rear sections having 1¾-inch square gang beams. These 4-unit attachments have 28 tines that rake out the small weeds, break up clods, and level the furrows left by the shovels or sweeps, thereby making for smoother subsequent cross-cultivation operation.

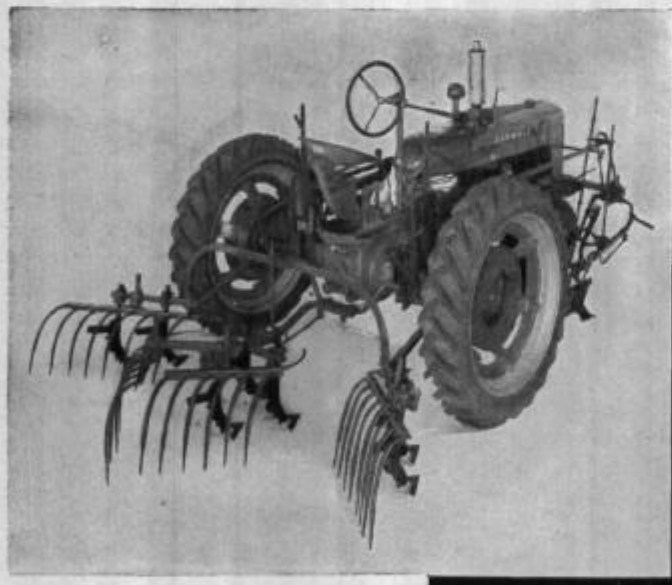
Nos. 4 and 5 are single-unit attachments comprising three rows of spring-steel tines staggered to give a maximum 2-inch spacing. The No. 4 weeder-mulcher is 7½-feet wide and works two rows (corn or cotton row-spacings). The No. 5 weeder-mulcher is 10 feet wide and will cultivate four or more narrow-spaced rows such as beets and beans.



Illust. 1 — No. 2 weeder-mulcher attachment.

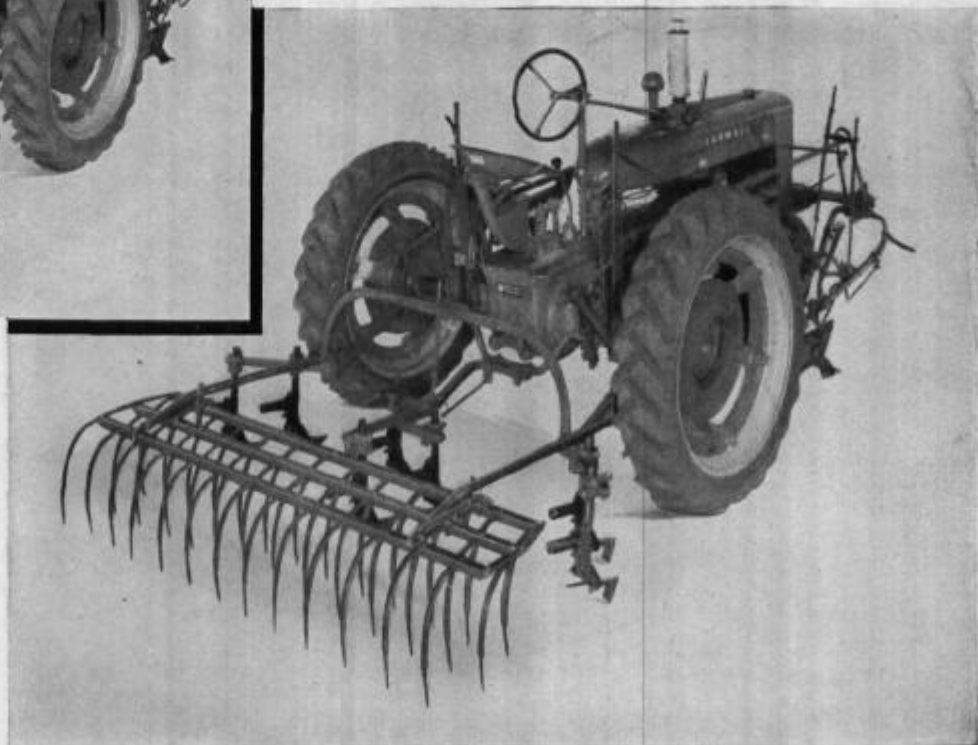
Specifications

	Description	Net Weight (Approx.)
No. 2	Weeder-mulcher attachment for use with Farmall cultivators having 3 or more shovels on rear section and with 1 x 1½-in. rectangular tool bars.....	86 lb.
No. 3	Weeder-mulcher attachment (same as above) except with 1¾-in. square tool bars.....	91 lb.
No. 4	Weeder-mulcher attachment—7½-ft. wide—for all Farmall cultivators having 2 or more shovels on the rear section.....	96 lb.
No. 5	Weeder-mulcher attachment—10-ft. wide—for all Farmall cultivators having 2 or more shovels on the rear section.....	114 lb.



Illust. 2 (above) — No. 3 weeder-mulcher attachment. Both the No. 3 and No. 2 are four-unit attachments designed for working between the rows.

Illust. 3 (right) — No. 4 weeder-mulcher. This single unit attachment (7½-ft.) covers 2 corn rows.

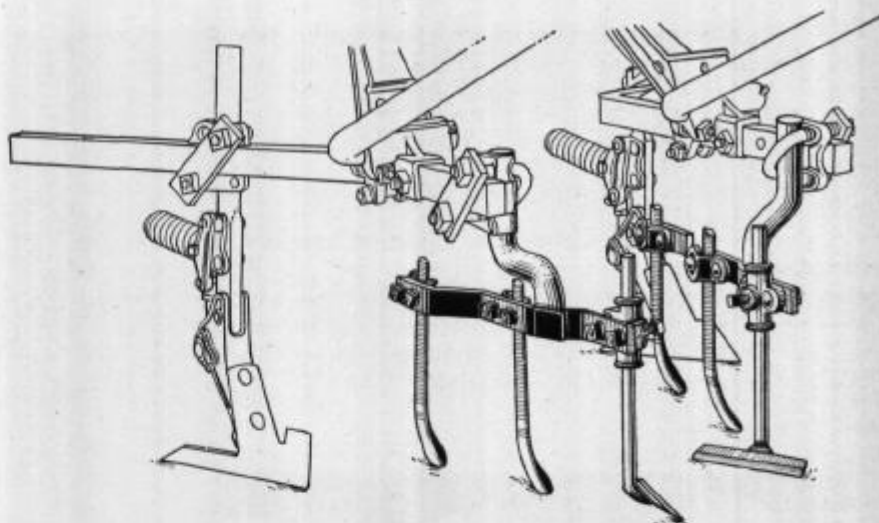


Tobacco Hoe and Tobacco Hiller Attachments

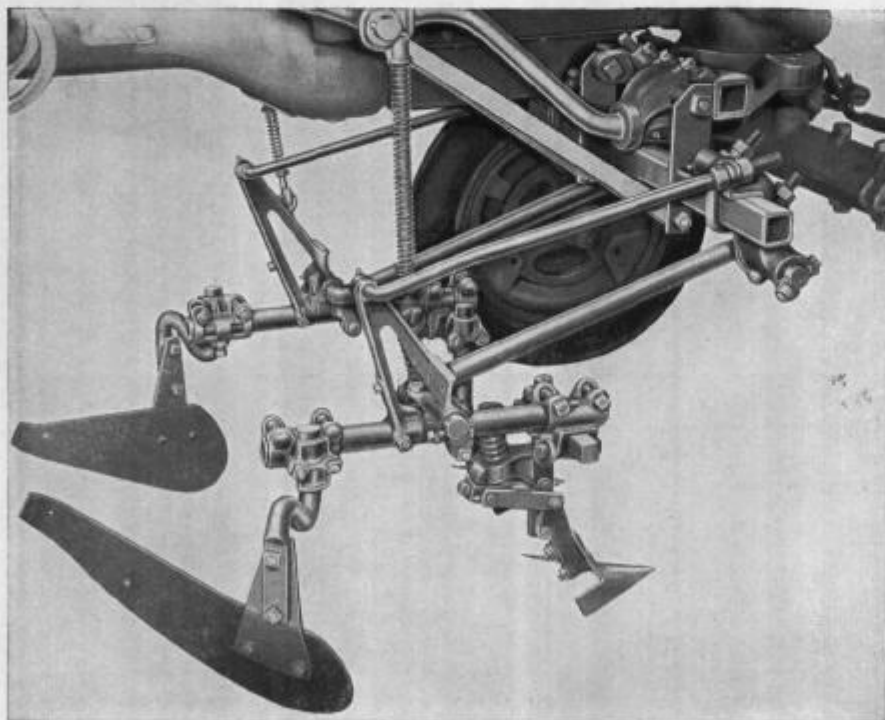
(For Farmall Cultivators)

Tobacco Hoe

The tobacco hoe attachment is designed to meet the needs of the tobacco raiser who wants an implement that can be worked closely to the plant, yet will not harm the delicate stalk. The tobacco hoe with its cutting action, blade-type front shovels, and diamond-point-type rear shovels meets these requirements in every respect. It cuts the weeds and gently stirs the soil—an ideal attachment for fine, close cultivation.



Illust. 1 — The tobacco hoe, shown here mounted on the HM-238 Farmall cultivator, is ideally suited to fine cultivation close to the plant. The use of this attachment cuts hand labor to the minimum.



Illust. 2 — The tobacco hiller attachment shown mounted on the AV-136 Farmall cultivator does an excellent job of hilling during or just following the last cultivation. Hilling gives support to the stalks.

Tobacco Hiller

The tobacco hiller attachment, designed for use following the last cultivation, consists of a pair of large blades which gently push the soil up and around the tobacco plant. The front shovels assist the hilling operation by loosening the dirt.

The tobacco hiller is furnished with two sizes of standards: the $1\frac{1}{4}$ -in. standard which fits all A and B cultivators and the HM-238 and the $1\frac{1}{16}$ -in. standard which fits the HM-240.



Potato Hillers and Potato Hoes

(For Farmall Cultivators)

Potato Hillers

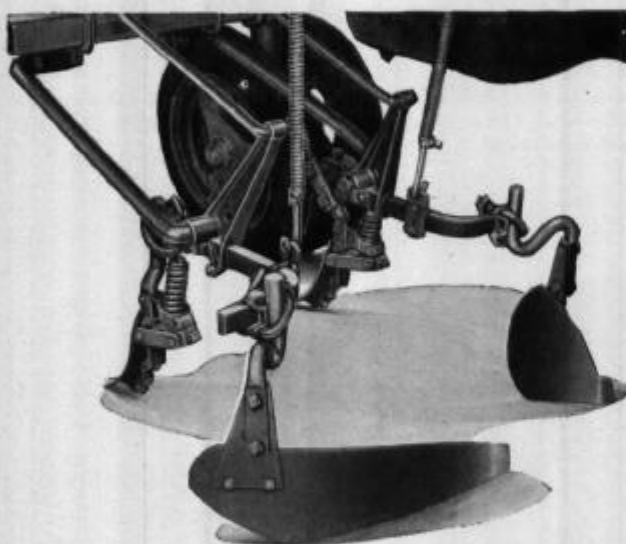
Potato hillers are designed to work in conjunction with shovels and sweeps or spring teeth. The cultivating tools loosen the ground and the hillers throw the loose soil up and around the potato plants.

Potato Hoes

Potato hoes are designed for hilling up two rows of potatoes spaced from 34 to 38-in. apart. Two large hiller blades, one on each side of the row, are attached to standards which are carried by a single square beam. The potato hoe can be used with No. 57 tool equipment only. The tool equipment loosens the soil and the blades complete the hilling operation.



Illust. 2—Potato hoe attachment available for use with spring-tooth equipment on HM-238 cultivators.

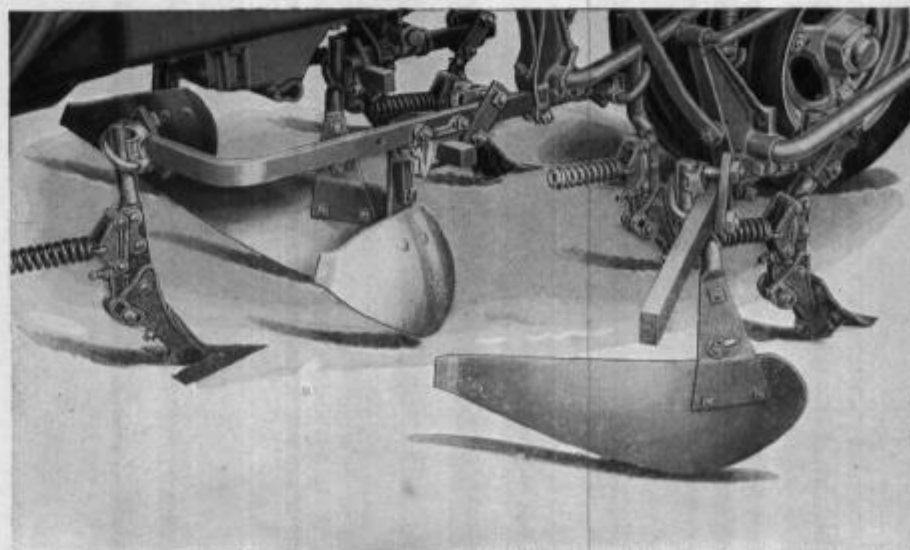


Illust. 1—No. 1 potato hiller attachment mounted on the B-238 cultivator.

Specifications

Type of Equipment	Net Weight (Approx.)
No. 1 potato hiller (Connecticut type) for cultivators with clamps for $1\frac{1}{4}$ -in. standards.....	29 lb.
No. 2 potato hiller (Connecticut type) for cultivators with clamps for $1\frac{1}{16}$ -in. standards.....	33 lb.
Potato hoe for HM-238 cultivator with No. 57 tool equipment.....	314 lb.
Potato hoe for HM-240 cultivator with No. 57 tool equipment.....	314 lb.

Illust. 3—(right) No. 1 potato hiller attachment on the HM-238 cultivator which has clamps for $1\frac{1}{4}$ -in. standards fitted to the solid steel, rectangular tool bar.



Bean Harvester Attachments

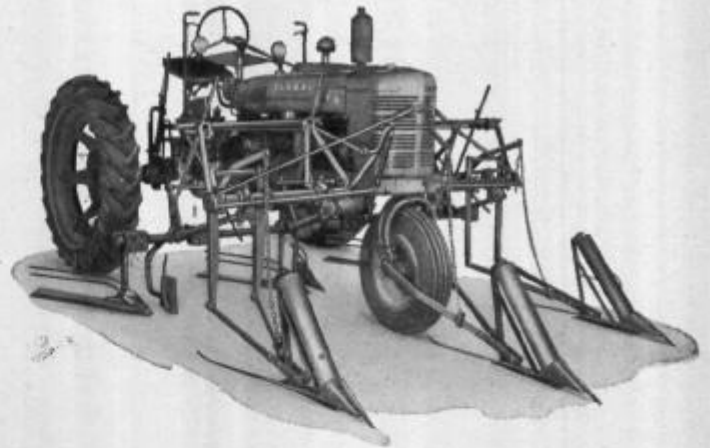
(For Farmall Cultivators)

The bean harvester attachments listed on this page are for use with Farmall tractors A, BN, H, M and MD equipped with cultivators. They are made in two types: one for irrigated areas and the other for non-irrigated areas.

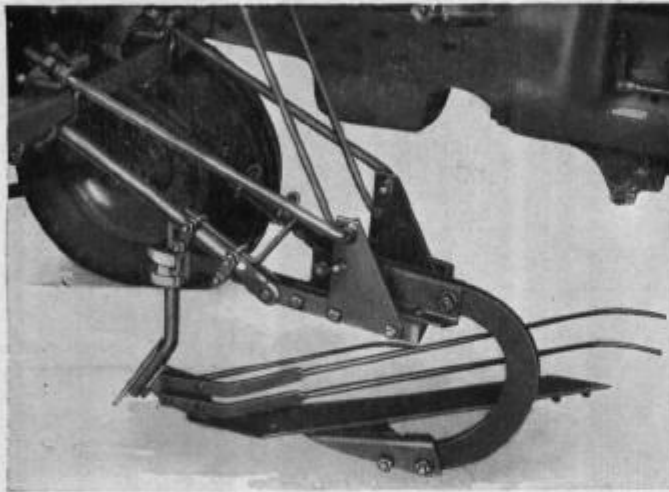
The irrigated type has a vine divider consisting of a sheet metal roller mounted on a skid shoe with a point ahead to lift the vines that lay in the irrigating trench.

The non-irrigated type of bean harvesters are equipped with a point type of divider which supports the vine turning rods. It is located directly ahead of the blade.

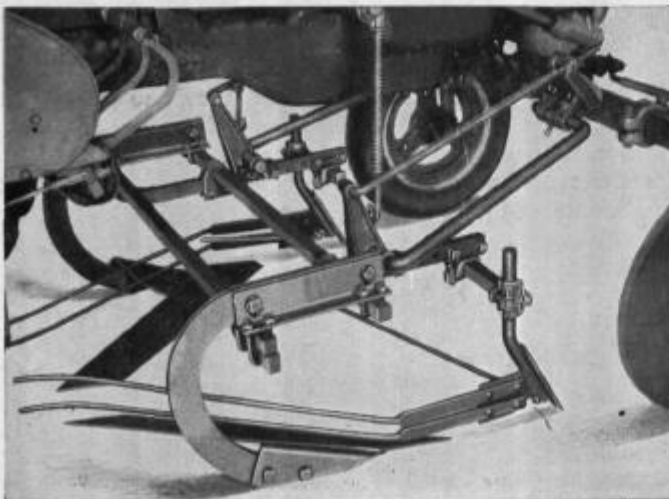
In both types the cutter blades are easily removed for sharpening.



Illust. 1 — The HM-439 cultivator with No. 19 bean harvester attachment — 6-row, irrigated type. This attachment can also be used with the Farmall cultivator HM-639.



Illust. 2 — The HM-439 cultivator with No. 28 bean harvester attachment — non-irrigated type.



Illust. 3. — The A-138 cultivator with No. 23 bean harvester attachment — non-irrigated type.

Bean Harvester Attachments

- No. 7 Two-row (non-irrigated) for Farmall cultivator HM-221.
- No. 19 Six-row (18 to 22-in. spacing) (irrigated) for Farmall cultivators HM-439 and HM-639.
- No. 23 Two-row (non-irrigated) for Farmall cultivator A-138.
- No. 24 Two-row (non-irrigated) for Farmall cultivator BN-221.
- No. 25 Four-row (28 to 40-in. spacing) (irrigated) for Farmall cultivators HM-430 and HM-639.
- No. 26 Four-row (20 to 24-in. spacing) (irrigated) for Farmall cultivator A-138.
- No. 27 Four-row (20 to 24-in. spacing) (irrigated) for Farmall cultivator A-437.
- No. 28 Two-row (28 to 30-in. spacing) (non-irrigated) for Farmall cultivators HM-439 and HM-639.
- No. 29 Two-row (28 to 30-in. spacing) (non-irrigated) for Farmall cultivators HM-242 and HM-242-A.
- No. 31 Two-row (28 to 30-in. spacing) (non-irrigated) for Farmall cultivators HM-238 and HM-240.
- No. 32 Two-row (28 to 30-in. spacing) (non-irrigated) for Farmall cultivator BN-238.

Note:

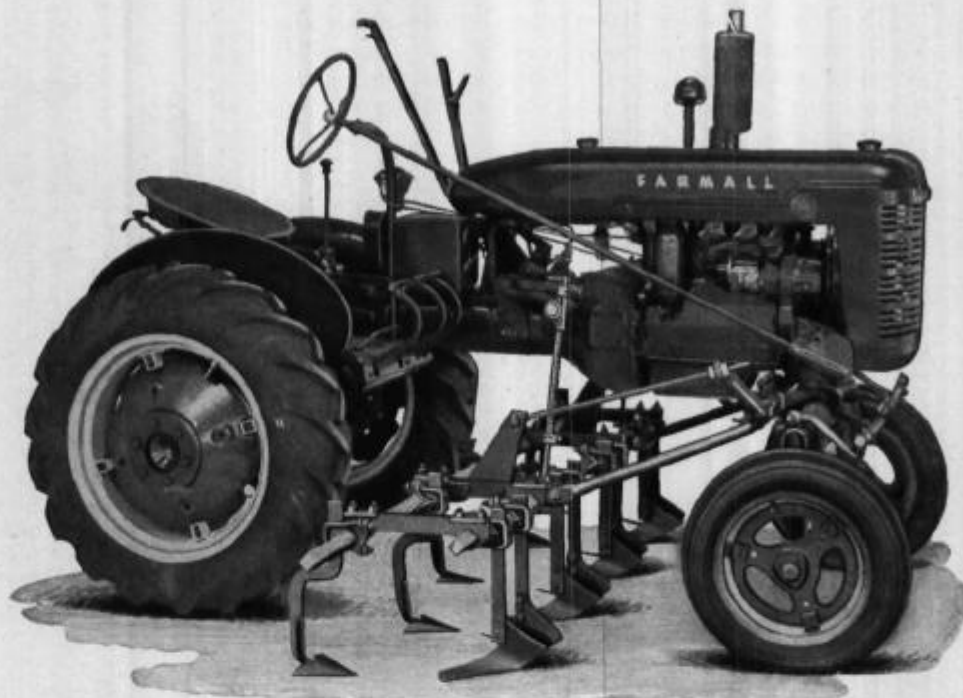
A front wheel divider is necessary for Farmalls-H and M (single front wheel) when used with bean harvesters Nos. 29 and 31.
A front vine lifter is necessary for Farmall BN-221 (double front wheels) when used with bean harvester No. 24.



A-437 Beet and Bean Cultivator

(For Farmall-A)

- Ideal for flat or bedded crops.
- One to six rows, depending on the row spacing.
- Wide variety of ground-working tools.
- Solid steel, rectangular tool bars for increased rigidity.
- Parallel-link construction keeps tool bars level.
- Culti-Vision — unobstructed view for close, accurate work.



Illust. 1 — The A-437 cultivator, equipped with knife weeders and duckfoots, and operated by a hand lift.

The A-437 is a parallel tool bar cultivator designed to work in flat or bedded plantings of crops such as beets and beans. The ground-working equipment can be arranged to work 1 to 6 rows, the maximum being 6 rows at 14 to 16-inch spacing and 4 rows at 24 inches.

The front section has two parallel tool bars which permit the arrangement of various types of ground-working equipment in practically any desired combination. The rigid construction of the tool bar frame keeps the tools in the exact position they are set.

The tool-bar frame is held level by the parallel-link construction between the tool bar frame and the tractor. This construction keeps the tools at the same angle regardless of depth they are working. An adjustment on the parallel-link construction makes it possible to adjust the suction of the ground-working tools.

The Culti-Vision Farmall-A with an A-437 cultivator gives an unobstructed view of the rows and makes a combination that cannot be beaten for accurate, easy, clean cultivation.

Equipment does not include ground-working tools, the selection of tools best suited to individual requirements are listed on pages 250-J to 250-N.

Regular Equipment

See Specifications below.

Special Equipment

129-in. tool bar in lieu of regular 101-in. tool bar. Type "R" rear section (single tool bar with 2 clamps). Type "T" rear section (double tool bar with 6 clamps). Double tool bar attachment with 4 clamps to convert an "R" type rear section to "T" type. Rear track sweep attachment with 2 spring trips and 2 duckfoots. Independent lift, rear section with 4 spring trips and 4 duckfoots. No. 27 bean harvester.

Specifications

Cult. No.	Tool Equip. No.	Type of Lift	Row Spacing (Inches)	Front Section	Rear Section	Net Weight (Approx.)
A-437	..	Hand	14-22	Double tool bar, 84 and 101-in., with 13 tool clamps*	None.....	295 lb.
A-437	..	Power	14-22	Double tool bar, 84 and 101-in., with 13 tool clamps*	None.....	340 lb.

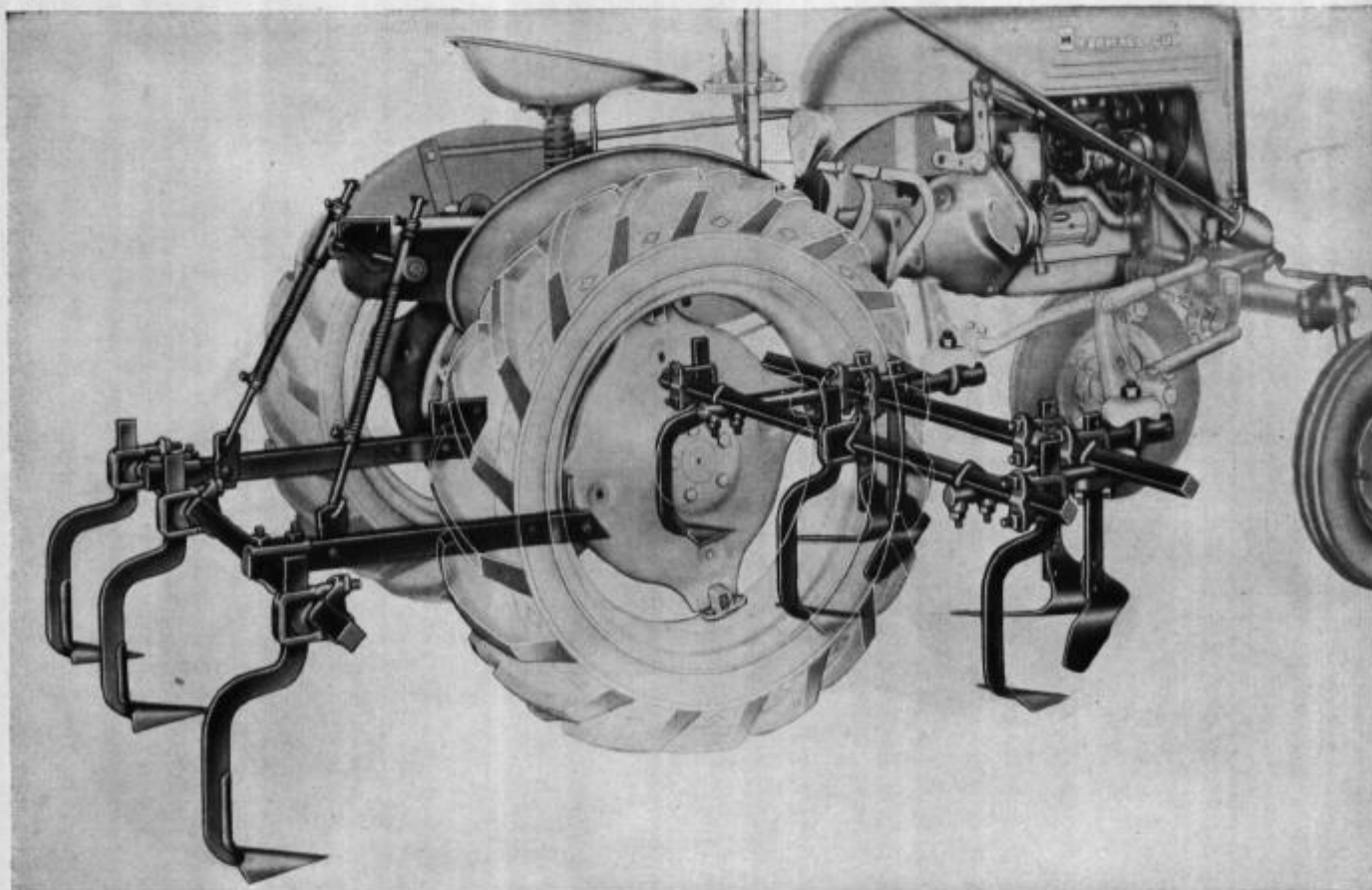
* Tool clamps 28309-BA, 30200-BB or 29601-BA as ordered. See page 250-J.



INTERNATIONAL HARVESTER



Farmall Cub
Cub-252 Beet and Bean Cultivator
Two-Row, Forward-Mounted



Illust. 1 — The Cub-252 is a versatile beet and bean cultivator capable of handling two, three, or four rows spaced from 12 to 28 inches apart. The rear section is special equipment.

- Simplicity with efficiency.
- Works close to plants.
- Versatility with low cost.
- Farmall Touch-Control or manual control.
- Quick-change attached. Once tools are correctly adjusted, they are not disturbed when being changed.

Regular Equipment

Front section with two parallel, $1\frac{1}{4}$ -inch square, 62-inch long, tool bars, and with five of the following

clamps, as specified: 28 309 BA for $1\frac{1}{2} \times \frac{9}{16}$ -in. standards, 29 601 BA for $1\frac{1}{8}$ or $1\frac{1}{4}$ -in. round standards, and 30 200 BB for $1\frac{1}{2} \times \frac{9}{16}$ -in. standards. Rear section and ground working tools are furnished on special order, select ground tools wanted from pages 250-J to 250-N.

Special Equipment

Cultivator shield, No. 80, parallel lift type. Gauge wheels with steel tires. L-type rear section (No. 512 748 R91) with single tool bar, $1\frac{1}{4}$ in. square, 62 in. long, and three clamps, as specified, less all tools. This rear section is recommended for use when more than two ground working tools are desired. (When only two sweeps are required, as for removing wheel tracks, the rear section regularly furnished with the Cub-144 one-row cotton and corn cultivator may be used. This is the rear track sweep attachment, No.



Farmall Cub

Cub-252 Beet and Bean Cultivator

(Continued)



Specifications

Cultivator No.	No. of Rows	Row Spacing	UNIVERSAL UNITS REQUIRED		Net Weight (approx.)
			Touch-Control	Manual Control	
Cub-252	Four	Max. four 12-in. rows; three 16 or 18-in. rows; two 22 or 28-in. rows	No. 511 892 R91 Universal Mounting Frame	No. 511 892 R91 Universal Mounting Frame No. 511 893 R92 Raising Lever and Rear Rockshaft No. 511 894 R91 Front Rockshaft	110 lb. less rear section and ground tools

NOTE: See "Special Equipment" for information on rear cultivator sections.

511 897 R91 consisting of two-gang beams, each carrying a friction trip and sweep.) For tractors with Farmall Touch-Control, one 512 652 R92 Rear Rockshaft is required for raising and lowering these rear sections. Spring trip, No. 29546B, complete (No. 15 style). Ground working tools, clamps, and standards listed on pages 250-J to 250-N.

A Versatile Cultivator

The Cub-252, two-row, beet and bean cultivator is built to operate as an integral unit with the Farmall Cub tractor. It is not only a beet and bean cultivator, but also can be used for other vegetable crops with row spacings from 12 to 28 inches.

The Cub with an adjustable front axle will cultivate four 12-inch, three 16 or 18-inch, or two 22 or 28-inch rows. The cultivator, however, can be used on tractors equipped with the fixed front axle permitting only three 12-inch or two 16, 18, or 20-inch rows to be cultivated. Because of this fact, it is recommended that the tractor be equipped with adjustable-type front axle.

Simple, Rugged Ground Unit

The front section consists of two 1¼-inch square tool bars, 62 inches long, which are attached to support arms. Attaching bolts, with nuts, on the support arms fit into the gang heads of the Universal Mounting Frame. An L-type rear section (special equipment) consists of a 62-inch long tool bar which is attached to the rear mounting pads of the tractor with flat gang beams and attaching plates. This L-type unit is recommended for use when more than two ground tools are desired on the rear section. But when an operation calls for two ground tools to remove the rear track, the regular Cub-144 cultivator rear section may be procured on special order.

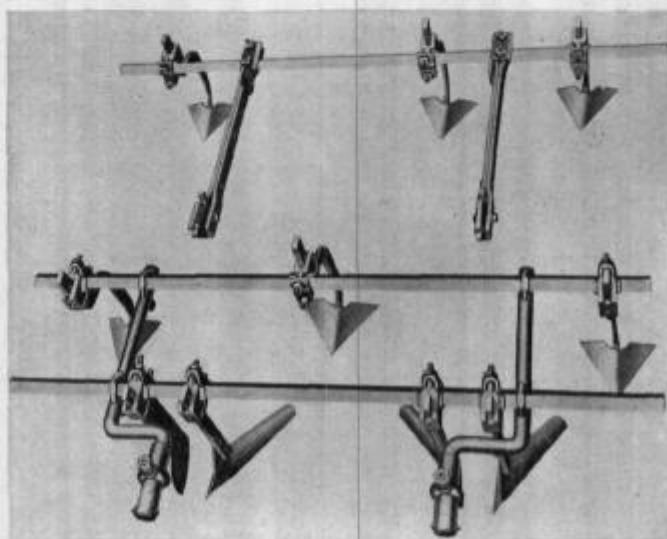
Quick-Change Ground Units

Attaching the ground unit is very simple. Just slide the front section under the tractor, lower the Universal Mounting Frame, slip the tool bar support arms into the Universal Mounting Frame gang head and tighten the two tapered nuts.

If a rear section is used, remove the tractor drawbar, then slip the slotted attaching plates on the gang beams over the bolts and tighten. The cultivator is ready for work.

Ground Tools

A wide selection of ground tools is available, and from this group, the purchaser may choose according to his specific crop and soil requirements. (For details, refer to pages 250-J to 250-N.)



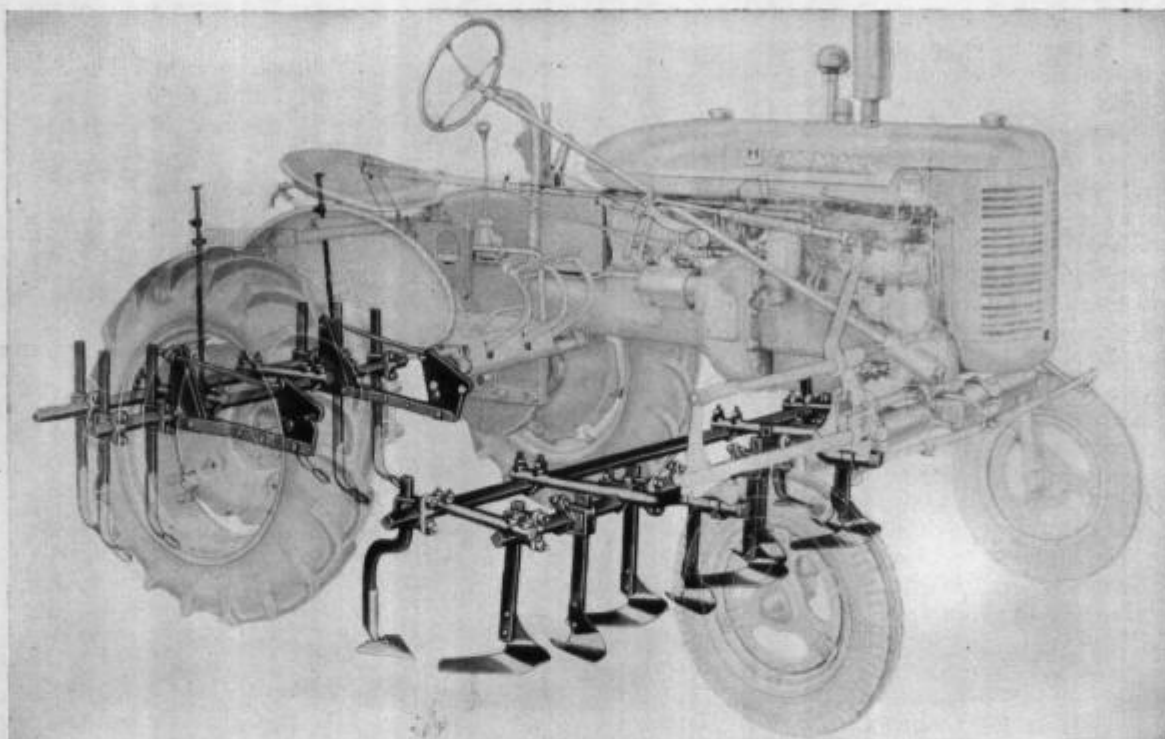
Illust. 2 — Farmall Cub-252 beet and bean cultivator regular front section and special tool bar rear section.



Farmall Super-A

A-452 Beet and Bean Cultivator

Four-Row, Forward-Mounted



Illust. 1—The A-452 beet and bean cultivator is the ideal cultivating unit for specialized as well as general farming. The A-452 shown here is equipped with the "T"-type rear section. "R"-type and "L"-type rear sections are also available.

- Simplicity with efficiency.
- Speed with ease of operation.
- Versatility with low cost.
- Farmall Touch-Control for effortless raising and lowering
- Farmall Touch-Control for accurate, instantaneous adjustments.
- Quick-change from one operation to another without changing original setting and adjustment of ground tools with a choice of ten standard clamps as listed under special equipment.

Regular Equipment

A-452 four-row beet and bean cultivator (front section) with a choice of 13 standard clamps as listed under special equipment. L-type rear section (single tool bar *without* parallel action linkage) with choice of 3 standard clamps as listed under special equipment. R-type rear section (single tool bar *with* parallel action linkage) with choice of 3 standard clamps as listed under special equipment. T-type rear section (double tool bar *with* parallel action linkage) with choice of 6 standard clamps as listed in special equipment. Rear track sweep. The above rear sections are furnished only when ordered.

Special Equipment

28309-BA standard clamp, complete (for $1\frac{1}{2} \times \frac{9}{16}$ -in. standard). 28310-B standard clamp, complete (for

$2 \times \frac{5}{8}$ -in. standard). 30200-BB quick-adjustable standard clamp, complete (for $1\frac{1}{2} \times \frac{9}{16}$ -in. standard). 29601-BA standard clamp, complete (for $1\frac{1}{8}$ or $1\frac{1}{4}$ -in. round standard). No. 6 diamond point. No. 12 irrigating attachment. No. 12 deer tongue. No. 21 duck foot ($7\frac{1}{2}$ -in. cut). No. 22 duck foot (9-in. cut). No. 22 knife weeder (5-in. cut). No. 23 knife weeder ($6\frac{1}{2}$ -in. cut). No. 80 cultivator shield (front section). No. 111 disk weeder. 29602-B round standard (pin break) (slotted shank). 28615-B standard $1\frac{1}{2} \times \frac{9}{16}$ -in. (for deer tongues). 28616-B standard $1\frac{1}{2} \times \frac{9}{16}$ -in. (for disk or knife weeders). 30087-B standard $1\frac{1}{2} \times \frac{9}{16}$ -in. (for No. 12 irrigating attachment). 29546-B spring trip, complete (No. 15 style). POGW-61 gauge wheel, L.H. POGW-62 gauge wheel, R.H. 512 792 R91 double tool bar attachment (to change "R"-type rear section to double tool bar rear section). 29706-B special long tool bar for front section for cultivating six rows spaced 18, 20 or 21 in. apart).

Specifications

Cultivator No.	Universal Units Required	No. of Rows	Row Spacing	Net Weight (Approx.)
A-452	Universal Mounting Frame	Four	Max. four 24-in. rows	180 lb. <small>Less rear section</small>
Rear section, type "L," "R," "T"	Universal (Rigid)* Rockshaft			

*If the purchaser contemplates buying an A-189 two-way plow it is suggested that the Universal (split) Rockshaft be purchased to avoid expenditures for both rockshafts.



INTERNATIONAL HARVESTER



A-452 Beet and Bean Cultivator

Four-Row, Forward-Mounted (Continued)



The A-452 forward-mounted, 4-row beet and bean cultivator is designed to work as an integral unit with the Farmall Super-A tractor. It will cultivate a maximum of four 24-inch rows.

The front section consists of two $1\frac{1}{4}$ -inch square tool bars, one 84 inches long and the other 101 inches long. Thirteen standard clamps are furnished as ordered. The tool bars are attached to the Universal Mounting Frame (furnished only when ordered) by offset attaching bars which may be reversed and placed above or below the tool bars to avoid interference with the location of the standard clamps for various row widths.

The rear section—"L," "R," and "T"-type tool bar rear sections and a rear track sweep attachment (same as regularly supplied for A-144 cultivator) are available and furnished only when ordered. Tool bar type rear sections are recommended for use when more than two ground working tools are desired on the rear. The track sweep attachment carries only tools to remove the tractor rear wheel tracks. All the above rear sections are quickly and easily attached or detached to or from the Tractor Mounting Pads on the tractor rear housing.

The "L"-type tool bar rear section has non-parallel action linkage and consists of: (1) a single $1\frac{1}{4}$ -inch square tool bar, 72 inches long, and (2) three standard clamps, furnished only as ordered. The same clamps are available as for the front section.

The "R" and "T"-type rear sections have parallel action linkage. The "R"-type rear section consists of one $1\frac{1}{4}$ -inch square tool bar, 72 inches long. The "T"-type rear section consists of two $1\frac{1}{4}$ -inch tool bars, 60 inches long. The "R" type rear section includes three standard clamps and the "T" type rear section includes six standard clamps. These clamps are furnished only as ordered. The same clamps are available as those furnished for the front section. If more standard clamps than those furnished regularly are required, they will be furnished when ordered.

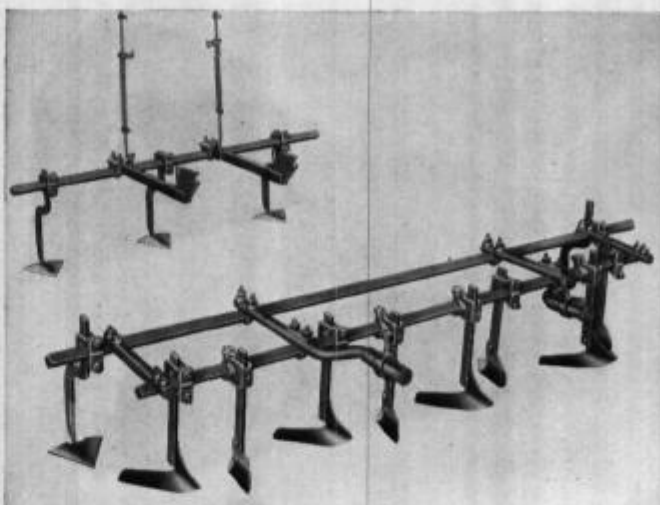
The rear track sweep attachment consists of two $1\frac{3}{8}$ -inch square adjustable gang beams. Each carries a spring trip and sweep and is identical to the No. 28 tool equipment rear section for the A-144 cultivator.

Universal Rockshaft

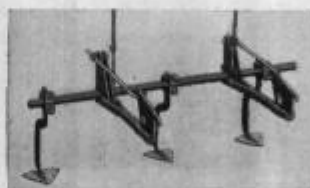
The Universal (rigid) Rockshaft is required for raising and lowering the rear section. It is furnished only when ordered. The Universal (split) Rockshaft, designed for use with the A-189 one-furrow, two-way moldboard plow, can be used equally well in place of the rigid rockshaft for this cultivator. If the purchaser contemplates buying the A-189 two-way plow, it is recommended that the Universal (split) Rockshaft be purchased to avoid an expenditure for both rockshafts.

Ideal Cultivating Unit

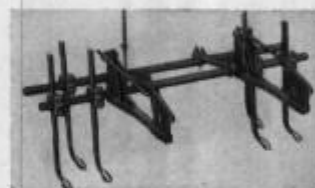
Simplicity with efficiency . . . speed with ease of operation . . . versatility with low cost . . . and quick-



Illust. 1—A-452 cultivator regular front section and the "L"-type rear section.



Illust. 2—"R"-type parallel-acting rear section.



Illust. 3—"T"-type parallel-acting rear section.

change from one operation to another: these are the features that make the A-452 four-row beet and bean cultivator the ideal cultivating unit for specialized as well as general farming. The A-452, mounted on the Farmall Super-A tractor, results in a balanced and matched cultivating unit which is highly efficient not only as a beet and bean cultivator but also for vegetable crops with row spacings from 12 to 40 inches.

Quick-Change

Attaching the ground unit is simple. For the front section: (1) just slide it under the tractor; (2) using Farmall Touch-Control, lower the Universal Mounting Frame; (3) slip the tool bar support arms into the Universal Mounting Frame gang heads and tighten the two tapered nuts. If a rear section is used: (1) loosen the bolts on the rear Tractor Mounting Pads; (2) slip the slotted attaching plates on the gang beams over the bolts; (3) tighten them up. The cultivator is ready for the field.

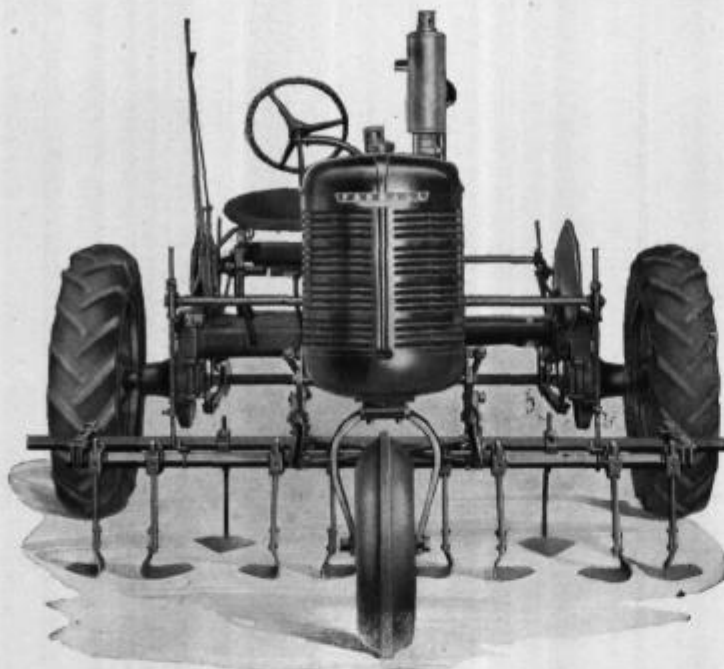
Ground Tools

A wide selection of ground tools is available. The selection is left to the purchaser in order that he may make the proper choice to meet his specific soil and crop requirements (see pages 250J to 250L for details).



B-435 and BN-435 Beet and Bean Cultivators

(For Farmalls B and BN)



Illust. 1—B-435 Farmall beet and bean cultivator, equipped with knife weeder and duckfoots, one of the many combinations of ground tools available.

The B-435, for the Farmall-B, and the BN-435, for the narrow-tread Farmall-BN, are parallel tool bar cultivators designed to work in flat or bedded plantings of vegetable crops such as beets, beans, lettuce, onions or parsnips. The ground-working equipment can be arranged to work 1 to 6 rows, the maximum being 6 rows at 14 to 16-inch spacing and 4 rows at 22 inches.

The front section has two parallel tool bars which permit the arrangement of various types of ground-working equipment in practically any desired combination. The rigid construction of the tool bar frame keeps the tools in the exact position they are set.

The tool-bar frame is held level by the parallel-link construction between the tool bar frame and the tractor. This construction keeps the tools at the same angle regardless of depth they are working. An adjustment on the parallel-link construction makes it possible to adjust the suction of the ground-working tools.

The Culti-Vision Farmalls B and BN with B-435 and BN-435 cultivators give an unobstructed view of the rows and make a combination that cannot be beaten for accurate, easy, clean cultivation.

- Ideal for flat or bedded crops.
- One to six rows, depending on row spacing.
- Wide variety of ground-working tools.
- Solid steel, rectangular tool bars for increased rigidity.
- Parallel-link construction keeps tool bars level.
- Culti-Vision—unobstructed view for close, accurate work.

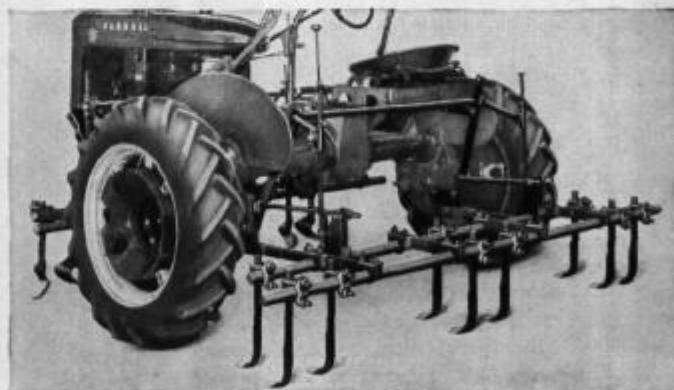
Regular Equipment

See Specifications below.

Equipment does not include ground-working tools, the selection of tools best suited to individual requirements are listed on pages 250-J to 250-N.

Special Equipment

129-in. tool bar in lieu of regular 101-in. tool bar. "T" type rear section with double tool bar which includes 4 tool-bar clamps, in lieu of "R" type rear section. Double tool bar attachment with 6 clamps to convert "R" type rear section to "T" type. Choice of vegetable tools as listed on pages 250-J to 250-N.



Illust. 2—B-435 cultivator equipped with "T" type double tool bar rear section. The diamond points are not included with the attachment, but may be had on order.

Specifications

Cult. No.	Tool Equip. No.	Type of Lift	Row Spacing (Inches)	Front Section	Rear Section	Net Weight (Approx.)
B-435	—	Hand	16-24	Double tool bar, 84-in. and 101-in., with 10 tool bar clamps*	"R" type rear section—single tool bar with 3 tool bar clamps*	456 lb.
B-435	—	Power	16-24	Double tool bar, 84-in. and 101-in., with 10 tool bar clamps*	"R" type rear section—single tool bar with 3 tool bar clamps*	488 lb.
BN-435	—	Hand	16-24	Double tool bar, 84-in. and 101-in., with 10 tool bar clamps*	"R" type rear section—single tool bar with 3 tool bar clamps*	454 lb.
BN-435	—	Power	16-24	Double tool bar, 84-in. and 101-in., with 10 tool bar clamps*	"R" type rear section—single tool bar with 3 tool bar clamps*	485 lb.

* Tool clamps 28309-BA, 30200-BB or 29601-BA as ordered. See page 250-J.



INTERNATIONAL HARVESTER

250-A

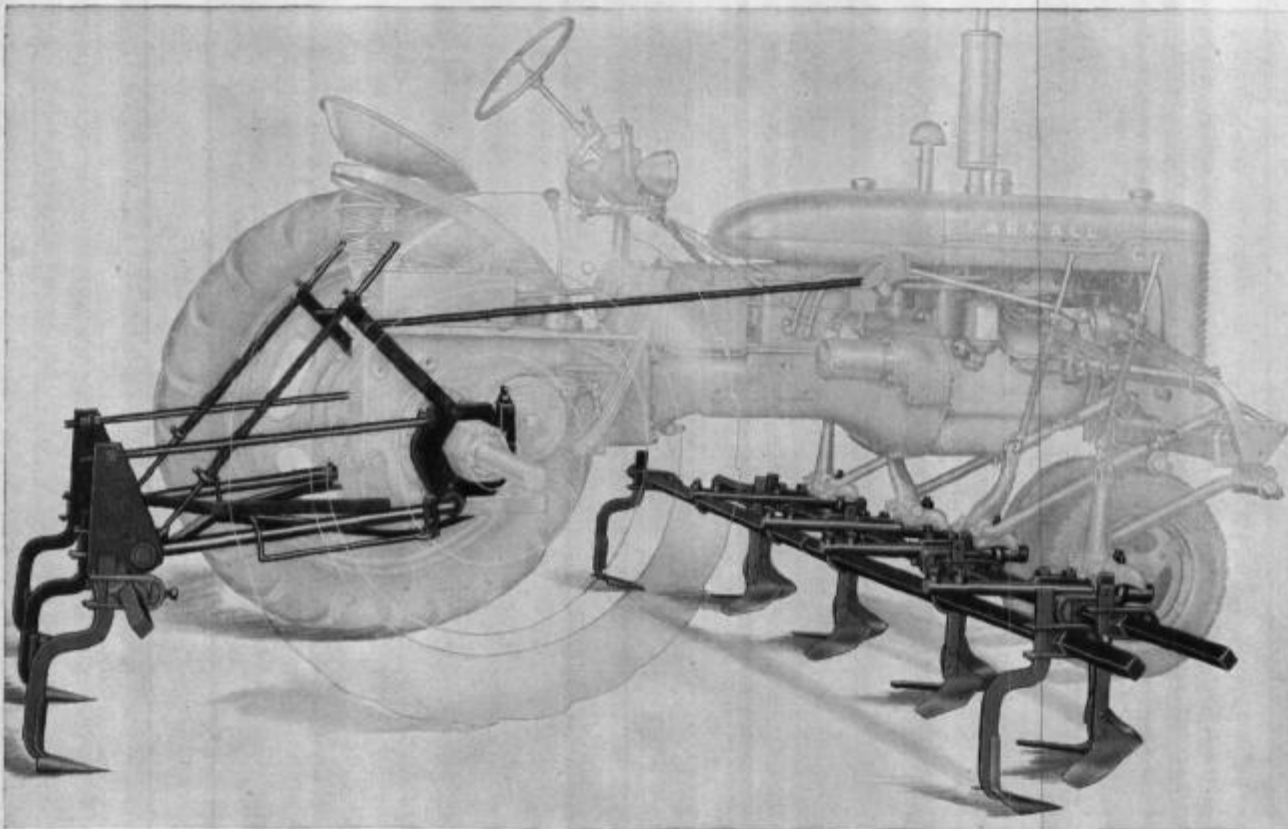
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Farmall C

C-452 Beet and Bean Cultivator

Four-Row, Forward-Mounted



Illust. 1 — The C-452 Beet and Bean Cultivator with R-type rear section (shown equipped with rear rocker arm lift).

- For beets, beans and other crops planted in 18 to 24-inch rows.
- Parallel-bar front section carried on Universal Mounting Frame.
- Full view of rows and work being done.
- Three types of rear sections available... single and double tool-bar types and corn and cotton type.
- Wide choice of ground tools for every need.
- Touch-Control — raises and lowers the gangs and regulates working depth.

The C-452 is designed especially for the cultivation of beets, beans and similar-spaced row crops. It will cultivate four rows spaced up to 24 inches. The cultivator consists of two front gangs, each having two parallel $1\frac{3}{8}$ -inch square tool bars, 50 inches long, and provided with ten standard clamps.

The tool bars are attached to the Universal Mounting Frame by straight attaching bars. These bars can be

positioned to avoid interfering with the proper location of the standard clamps for different row spacings. A wide selection of ground working tools can be supplied. Because of the widely varying requirements of different localities and for different crops, all ground working tools are furnished as Special Equipment.

Regular Equipment

Ten of any of the following style standard clamps, as selected, are furnished regularly with the front section:

Quick-adjustable clamp for $1\frac{1}{2} \times \frac{9}{16}$ -inch standard.

Plain style clamp for $1\frac{1}{2} \times \frac{9}{16}$ -inch standard.

Plain style clamp for $1\frac{1}{8}$ or $1\frac{1}{4}$ -inch round standards.

NOTE: The R-type rear section, when ordered, is regularly furnished with three of any of the above clamps, as specified. The T-type rear section, when ordered, is regularly furnished with nine of any above standard clamps, as selected.

Special Equipment

R-type single tool-bar rear section. T-type double tool-bar rear section. Parts for converting R-type rear section to T-type. Corn and cotton type rear section. Pressure rod bundle for rear section (all types) when controlled by Universal Rear Rockshaft. Rear rocker arm bundle (required when rear section is not controlled by Universal Rockshaft).

For ground working tools and equipment, see next page.

Specifications

Description	No. of Rows	Row Spacing	Universal Unit Required	Net Weight (Approx.)
C-452 Beet and Bean Cultivator (front section only)	4	18 to 24-in.	Mounting Frame	198 lb.
R-type Rear Section			Rear Rockshaft (optional)	* 155 lb.
T-type Rear Section				
Corn and Cotton Rear Section				

* Weight shown includes special pressure rod parts. NOTE: All weights shown are less clamps and ground tools.



INTERNATIONAL HARVESTER

250-B

PRINTED IN UNITED STATES OF AMERICA — MARCH 1948



Farmall C

C-452 Beet and Bean Cultivator

(Continued)



Ground Working Tools and Equipment

The following ground working tools and equipment are supplied, on special order, for the front section and R and T-type rear sections. For descriptions refer to *Ground Working Tools*—pages 250-J to 250-N.

- 28 310 B standard clamp, for 2 x 5/8-in. standard.
- 29 602 B pin-break, slotted shank standard, complete.
- 28 615 B standard (1 1/2 x 3/8-in.) for deer tongue.
- 28 616 B standard (1 1/2 x 9/16-in.) for disk and knife weeders.
- 30 087 B standard (1 1/2 x 9/16-in.) for No. 12 irrigating shovel.
- 29 546 B spring trip standard (No. 15 style).
- No. 6 diamond point.
- No. 12 irrigating shovel.
- No. 12 deer tongue.
- No. 21 duckfoot (7 1/2-in.).
- No. 22 duckfoot (9-in.).
- No. 22 knife weeder (5-in.).
- No. 23 knife weeder (6 1/2-in.).
- No. 80 cultivator shield (for front section).
- No. 111 disk weeder.
- POGW-61 gauge wheel, left.
- POGW-62 gauge wheel, right.

Rear Section

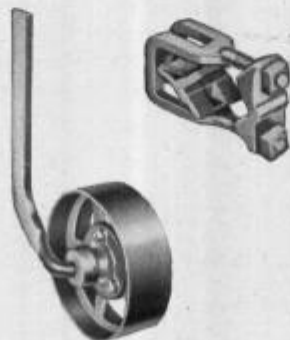
Three cultivator rear sections are supplied as ordered, giving the purchaser a choice to meet his individual needs. They are available in the following types:

- R-type, single tool-bar rear section
- T-type, double tool-bar rear section
- Corn and Cotton type rear section

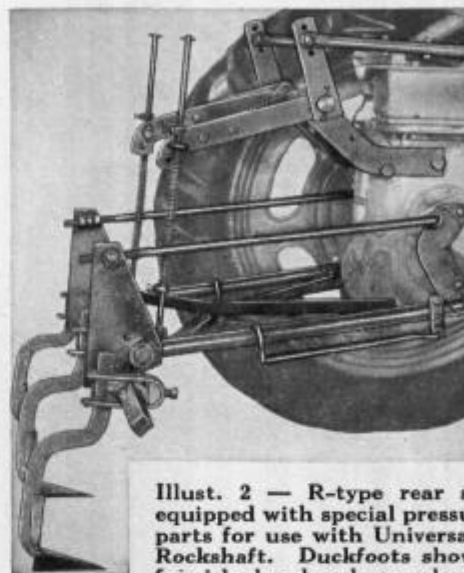
The tool-bar rear sections have parallel-action linkage, the same as is built into the Universal Mounting Frame which carries the front section. This means that the ground tools always have the proper pitch regardless of the depth at which they are working. The R-type rear section consists of one 1 3/8-inch square tool bar, 90 inches long, provided with three standard clamps, as specified. The T-type rear section consists of two 1 3/8-inch square tool bars, one 90 inches and the other 100 inches long. Nine standard clamps, as specified, are furnished as regular equipment. Any of the ground working tools as listed above under Special Equipment can be supplied for the R and T-type rear sections.

The Corn and Cotton type rear section is identical to the rear section of the C-244 cultivator. It consists of three 1 3/8-inch square beams, each carrying a spring trip and sweep. Any of the Special Equipment listed for the C-244 cultivator rear section can be used.

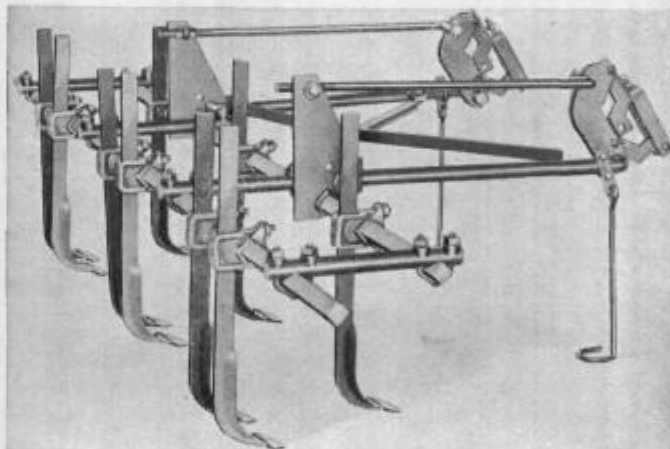
All rear sections are attached directly to the hexagon-shaped rear axle housing of the tractor by means of quick-attachable clamps. The rear sections must be equipped with either of two different lifting mechanisms, as ordered—one for use in connection with the Universal Rear Rockshaft (see Illust. 2), the other with rocker arms controlled directly from the Touch-Control power arm, as shown in the cultivator illustration on the preceding page.



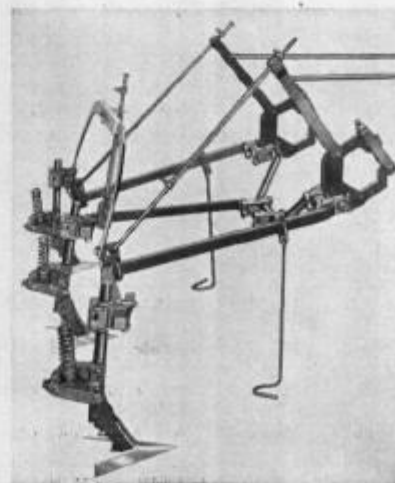
Illust. 1 — POGW-61 gauge wheel with clamp. Supplied as special equipment for use in loose soils.



Illust. 2 — R-type rear section equipped with special pressure rod parts for use with Universal Rear Rockshaft. Duckfoots shown are furnished only when ordered.



Illust. 3 — T-type rear section shown equipped with No. 6 diamond points.



Illust. 4 — Corn and Cotton type rear section shown equipped with rear rocker arm lift and No. 10 tool equipment.



HM-639 Beet and Bean Cultivator

Forward-Mounted, Six-Row for Farmall H, M and MD Tractors

The HM-639 is a six-row beet and bean cultivator for Farmall H, M and MD tractors equipped with hydraulic Farmall Lift-All, either regular or delayed-lift type. It is "quick-change" attached to the forward side and rear of the tractor. The HM-639 can be adjusted for cultivating six rows spaced from 16 to 22 inches apart. By removing clamps and tools it can be quickly adapted to cultivating four rows spaced from 16 to 30 inches apart.

Parallel-Action Linkage

The front and rear sections are of parallel-lift construction and permit the operator to set the tools the way he wants them to do their best work and keep them in that same relation to the ground regardless of the depth at which they are working. The front and rear sections of the gang units are always parallel with the ground whether the machine is set for cultivation or raised for transporting.

Flexible Construction

The front section, divided in the middle into two independent 2 or 3-row units, gives flexibility when working in uneven ground.

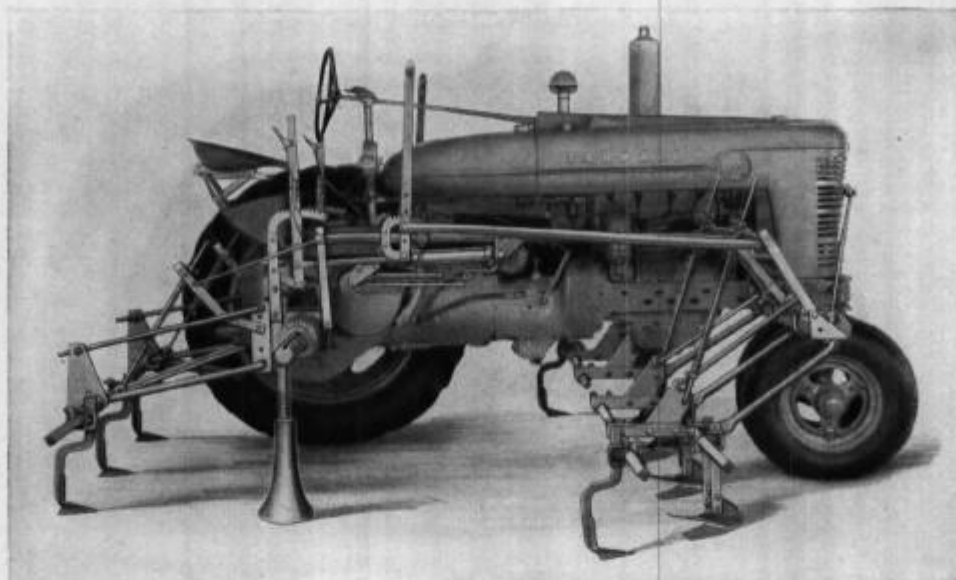
The double tool bar construction of the front section permits arranging various types of ground-working tools to suit crop requirements. Either a single or double tool bar rear section is supplied as ordered. Front and rear sections are regularly equipped with clamps as ordered. A wide selection of ground tools are available as special equipment to adapt this machine to any soil and crop.

Farmall Lift-All

If it is desired to lift the front and rear section together, two hydraulic cylinders are required for adapting this machine to the Lift-All; if delayed-lift is wanted, three cylinders are required.

Regular Equipment

See specifications at the bottom of the page. Ground tools are not regular equipment and must be ordered



Illust. 1 — The HM-639 beet and bean cultivator with clamps and tools arranged for four-row cultivation. Knife weeders and duckfoots are available as ordered.

from those listed on pages 250-J to 250-N. Choice of the following tool clamps: 30200-BB, 28309-BA or 29601-BA.

Special Equipment

Heavy-duty "T" type rear section (double tool bar with 9 tool clamps) in lieu of regular rear section. Tool bar 124 in. for "R" type single tool bar rear section in lieu of regular 90-in. Tool bar 124 in. for "T" type double tool bar rear section in lieu of regular 106-in. Triple tool bar for front section in lieu of regular double tool bar. Tool bar clamps for various standards. Extra heavy-duty "W" type tool bar rear section.

No. 12 irrigating attachment. Vegetable tools POGW-61, 62, 63, 64 gauge wheels (steel or steel with rubber overties). POGS-12 gauge shoes. No. 72 cultivator shields. No. 80 cultivator shields. No. 3 front gang attachment for cultivating rows spaced from 28 to 48 in.; this attachment comprises: 8 spring trips with four 10-in. half sweeps and 4 (6016-B) 8-in. sweeps, No. 68 shields and No. 74 jockey arch. Spring trip rear section for cultivating rows spaced from 28 to 48 in. comprises 7 spring trips with 7 (3191-B) 8 1/2-in. sweeps and No. 65 rear jockey arch. Spring trip, rear-track sweep attachment for cultivating rows spaced from 28 to 48-in. comprises 3 spring trips with 3 (6107-B) 10-in. sweeps and No. 65 rear jockey arch.

Specifications

Cult. No.	Type of Lift	Row Spacing (inches)	Front Section	Rear Section	Net Weight (Approx.) Lb.
HM-639-R	Power, Regular	16-22	Double tool bar with 16 tool clamps*	Single tool bar with 3 tool clamps*	830 lb.
	Power, Delayed	16-22	Double tool bar with 16 tool clamps*	Single tool bar with 3 tool clamps*	901 lb.
HM-639-T	Power, Regular	16-22	Double tool bar with 16 tool clamps*	Double tool bar with 9 tool clamps*	932 lb.
	Power, Delayed	16-22	Double tool bar with 16 tool clamps*	Double tool bar with 9 tool clamps*	1,003 lb.

* Tool Clamps 30200-BB, 28309-BA or 29601-BA as ordered. See page 250-J



INTERNATIONAL HARVESTER

250-D

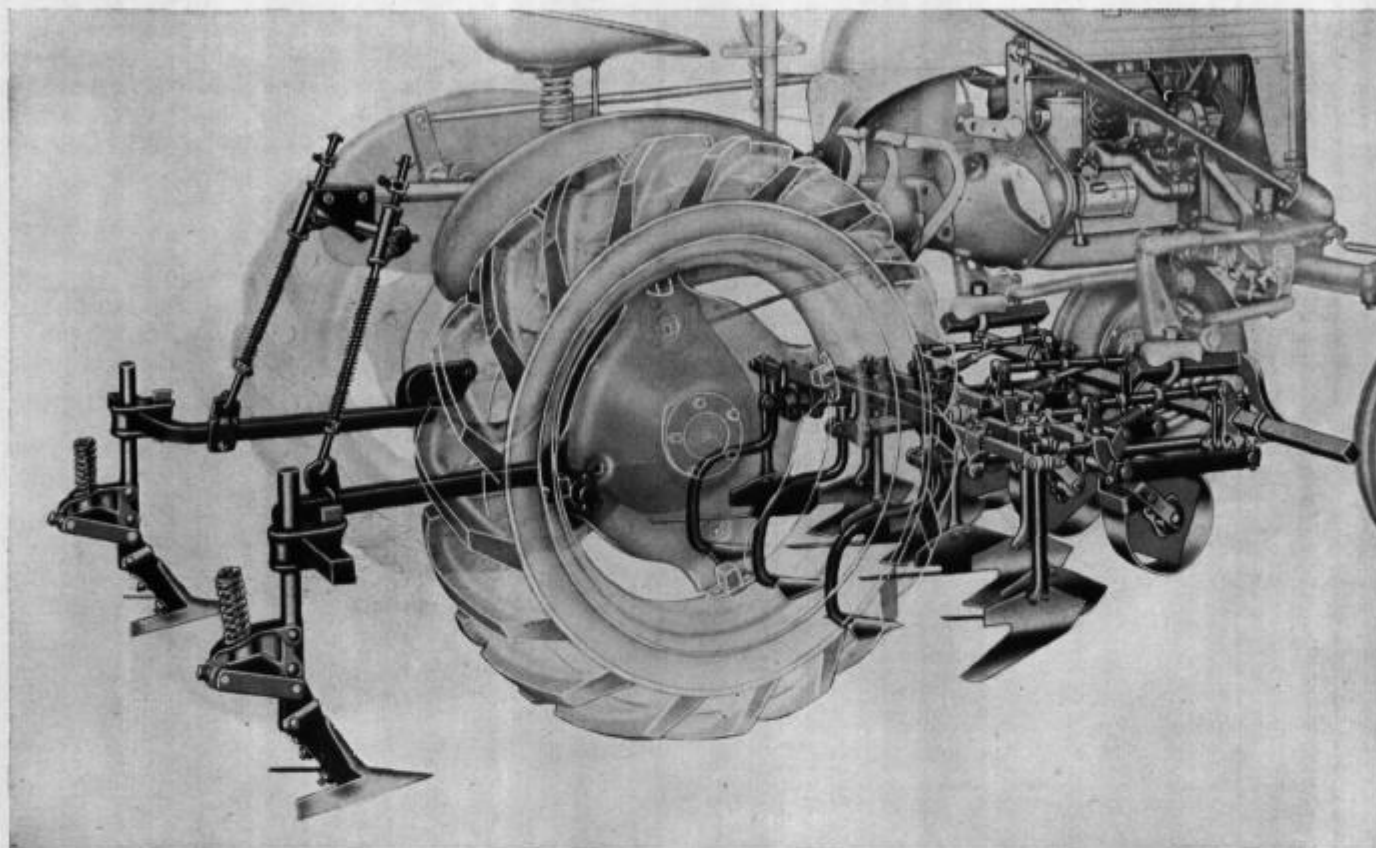
PRINTED IN UNITED STATES OF AMERICA — MARCH 1948



Farmall Cub

Cub-447 Vegetable Cultivator

Four-Row, Forward-Mounted



Illust. 1—The Farmall Cub-447 is a simple, low-cost cultivating unit that works all the soil and gets the weeds that are up close to the plant. The Cub-144 cultivator rear section shown is special equipment.

- Close, clean cultivation at high speeds.
- Cultivator units float independently, thus being free to follow the contours of the ground.
- Easy to operate.
- Farmall Touch-Control or manual control.
- Quick-change of implements without changing the original setting and adjustment of the ground tools.
- Ground tools for every type of soil.
- Culti-Vision for accurate, close cultivation.

Regular Equipment

The main tool and three cultivating units, equipped with adjustable tool bars, standards, and gauge wheels. Row guide. Ground working tools are furnished on special order.

Special Equipment

Disk weeder:

No. 113, 9-in.

Duckfoots:

No. 25, 5½-in. cut, ⅞-in. standard

No. 26, 9-in. cut, ⅞-in. standard.

Knife weeders for stony soil:

No. 2 (100 290 R91) 4-in. cut (one 511 906 R1 and one 511 907 R1)

No. 2 (100 291 R91) 6-in. cut (one 511 908 R1 and one 511 909 R1)

Suggested tools to permit cultivating four 12-inch, three 16 or 18-inch, and two 22 or 24-inch rows are as follows:

Muck and Loam Soils

- 3 — 511 900 R1 Knife Weeder Blade, R.H. (4½-in. cut)
- 3 — 511 901 R1 Knife Weeder Blade, L.H. (4½-in. cut)
- 3 — 511 902 R1 Knife Weeder Blade, R.H. (6-in. cut)
- 3 — 511 903 R1 Knife Weeder Blade, L.H. (6-in. cut)
- 3 — No. 25 Duckfoots (5½-in. cut)
- 1 — No. 26 Duckfoot (9-in. cut)



INTERNATIONAL HARVESTER

250-D-1

PRINTED IN UNITED STATES OF AMERICA — MARCH 1949



Farmall Cub

Cub-447 Vegetable Cultivator

(Continued)



Stony Soil

- 3 — 511 906 R1 Knife Weeder Blade, R.H. (4½-in. cut)
- 3 — 511 907 R1 Knife Weeder Blade, L.H. (4½-in. cut)
- 3 — 511 908 R1 Knife Weeder Blade, R.H. (6-in. cut)
- 3 — 511 909 R1 Knife Weeder Blade, L.H. (6-in. cut)
- 3 — No. 25 Duckfoot (5½-in. cut)
- 1 — No. 26 Duckfoot (9-in. cut)

Knife Weeders for Muck and Loam Soils

- No. 2 (100 292 R91) 4½-in. cut (one 511 900 R1 and one 511 901 R1)
- No. 2 (100 293 R91) 6-in. cut (one 511 902 R1 and one 511 903 R1)

Rear track sweep attachment consisting of two gang beams, each carrying a friction trip, and sweep, listed also for Cub-252 beet and bean cultivator. (For tractors with Touch-Control, a rear rockshaft unit (512 652 R92) is required to lift the above attachment.)

Spring tooth attachments:

- No. 94, single tooth; No. 95, double tooth; and No. 96, triple tooth.

Specifications

Cultivator No.	Maximum No., Rows Cultivated	UNIVERSAL UNITS REQUIRED		Net Weight (Approx.)
		Touch-Control	Manual Control	
Cub-447 Four-Row Vegetable Cultivator	4-12-in.	No. 511 892 R91 Universal Mounting Frame	No. 511 892 R91 Universal Mounting Frame No. 511 893 R92 Raising Lever and Rear Rockshaft Front Rockshaft No. 511 894 R91	182 lb.

Ideal Vegetable Cultivator

The Cub-447 four-row vegetable cultivator is especially designed for use with the Farmall Cub tractor. It can be adapted to any system of row spacing established with the Cub-474 four-row, forward-mounting vegetable planter.

The Cub-447 is a forward-mounted unit, quickly attached to the Universal Mounting Frame on the tractor. If the Farmall Cub tractor is equipped with an adjustable front axle, four 12-inch, three 16 or 18-inch, or two 22 or 24-inch rows can be cultivated. When the tractor is equipped with the fixed front axle, only three 12-inch or two 16, 18, or 20-inch rows may be cultivated.

Simple Ground Unit

The cultivator consists primarily of a square crossbar to which three cultivating units are attached.

The three cultivating units are quite simple. Each has an adjustable gauge wheel which controls the operating depth and a short tool bar. Clamps hold tool-bar extensions for the knife-weeder standards and other ground tools such as duckfoots. Ground tools are supplied as ordered.

Changing the spacing of the cultivating units on the main tool bar is simple and easy. Just loosen the clamp and slip the cultivating unit into the desired position. Tighten the clamp bolt.

Cultivating Units Float Independently

A pivot device allows each cultivating unit to float independently so that it is free to follow the exact contours of the ground. The results are a perfect cultivating job with fewer casualties in the row. Jockey bars link the units together to assure that they are held securely to the row spacings.

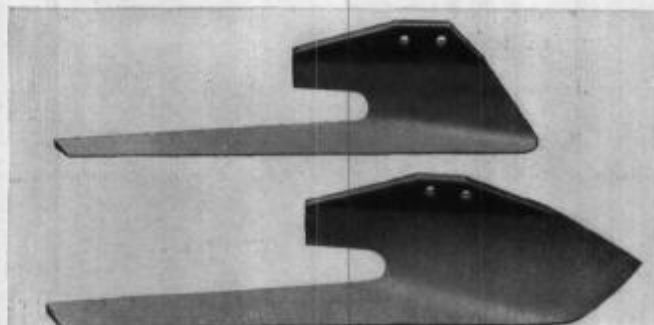
Removal of Wheel Tracks

Tractor wheel tracks may be easily removed while cultivating. This may be done by using the regular rear section of the Cub-144 cotton and corn cultivator.

Ground Tools for Every Type of Soil

Regardless of the type of soil — muck, loam, gravel, stony land, or land infested with noxious weeds — there is a complete set of ground tools to suit requirements.

Knife Weeder Blades — Two types of knife weeder blades are available on special order. One type is for muck and loam soils. The other is designed to work in gravel or stony soils. The knife weeders for muck and loam are recommended for all soils except those containing a large amount of stone or gravel. The weeder blades are available in either 4½ or 6-inch cuts.



Illust. 2 — The lower knife weeder blade is for muck and loam soil. The upper blade is for stony soil. The choice of ground tools is left to the buyer.



Farmall Cub Cub-447 Vegetable Cultivator

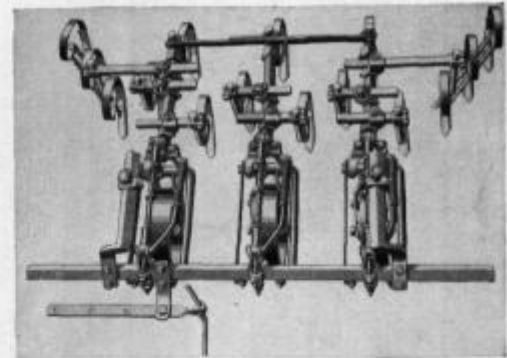
(Continued)



Duckfoots — Duckfoots (5½ or 9-inch cut) which will accommodate every type of soil condition are available on special order.

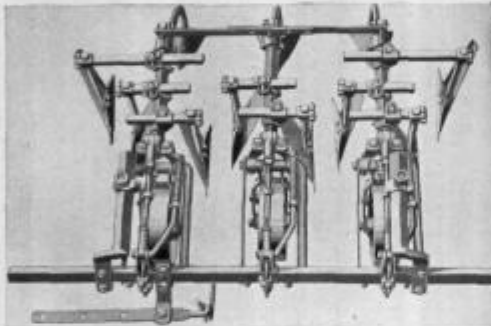
Self-cleaning, Spring-tooth Attachment — For stone, root, and noxious weed-infested soils, there are available single, double, and triple spring-tooth attachments which can be slipped quickly and easily into the regular clamps.

Disk Weeder — The 9-inch Disk weeder, available as special equipment, is excellent where a crust has formed, and for working close to the row. Used in pairs on the front of each unit, they slice the dirt and move it gently away from the plant. Other shovels, coming along



Illust. 4 — Farmall Cub-447 four-row vegetable cultivator unit equipped with spring-tooth attachment.

behind, break the crust and push the loose soil back, and around the plant.



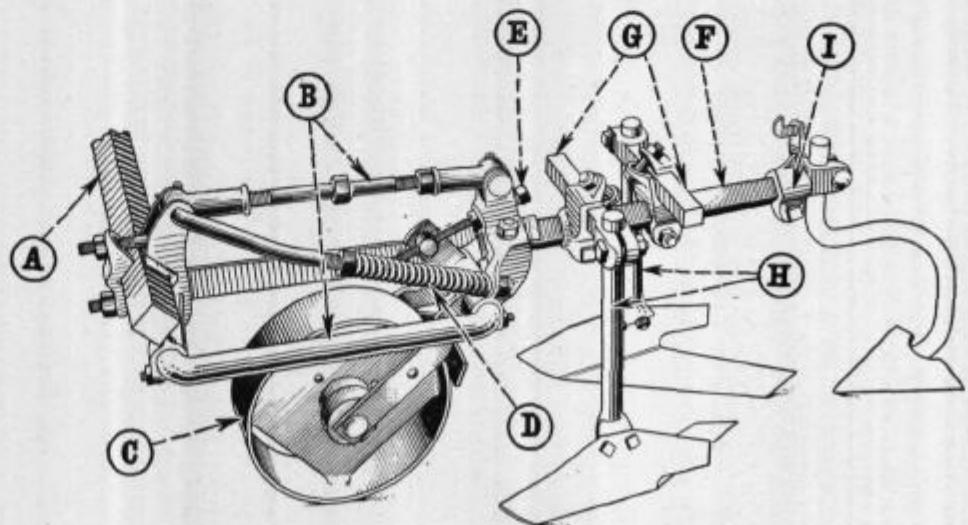
Illust. 3 — Farmall Cub-447 four-row vegetable cultivator showing individual ground units equipped with knife weeder blades and row guide.

Easy to Operate

The Cub-447 attached to a Farmall Cub tractor forms a simple, sturdy, balanced, and matched cultivator-tractor combination. This combination is the ultimate in simplicity of operation. One manual control or Touch-Control lever raises and lowers the cultivating unit. Each easy-to-adjust gauge wheel holds its associated cultivating unit to the selected operating depth. Unobstructed vision (Culti-Vision) permits the operator to see the work. He can drive speedily down the rows, even rows of tiny seedlings, and do a close-up cultivating job.

Illust. 5 — Each cultivating unit floats independently on the Cub-447, four-row vegetable cultivator, enabling the cultivating units to follow the contour of the ground.

Cultivating unit indicating component parts regularly furnished. A, main carrying bar. B, parallel linkage. C, gauge wheel. D, pressure spring. E, depth adjustment. F, tool bar. G, tool bar extensions. H, knife weeder standards. I, duckfoot clamp. The knife weeder blades and duckfoots are supplied as ordered.





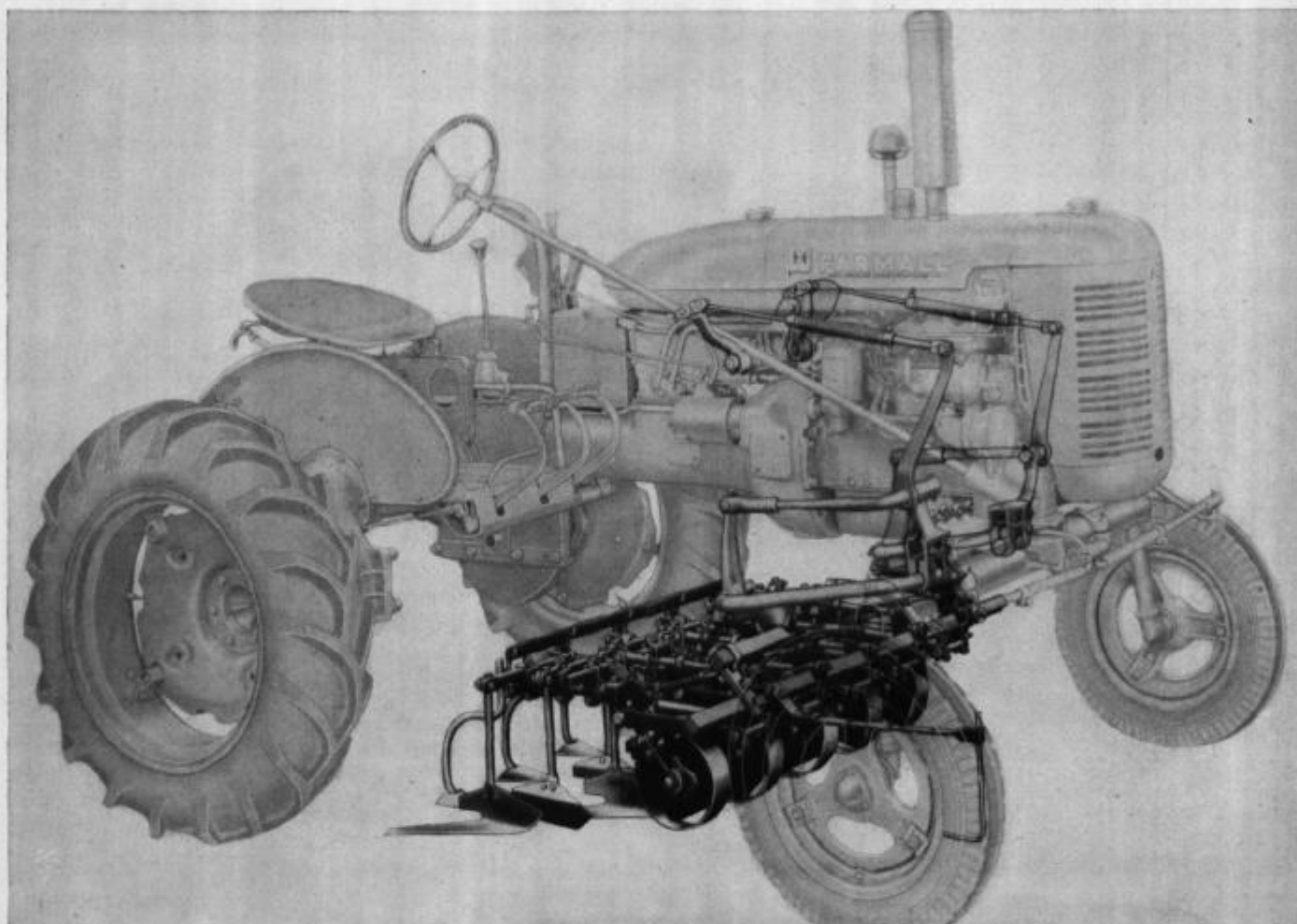
INTERNATIONAL HARVESTER

250-D-4

PRINTED IN UNITED STATES OF AMERICA — MARCH 1949



Farmall Super-A
A-647 Vegetable Cultivator
 Six-Row, Forward-Mounted



Illust. 1 — The A-647 six-row vegetable cultivator is a simple, low-cost, highly efficient, easy-to-operate and easy-to-change unit that works all the soil and gets the weeds right next to the plants.

- Simplicity with strength.
- Close, clean cultivation, at high speeds.
- Easy to operate.
- Farmall Touch-Control for effortless raising, lowering and adjusting.
- Quick-change of implements without changing the original setting and adjustment of the ground tools.

Specifications

Vegetable Cultivator	No. Rows	Row Spacing (inches)	Net Weight (Approx.)
A-647	2 to 6	10 to 20	485 lb.

The A-647 forward-mounted, six-row vegetable cultivator, designed to work as an integral unit with the Farmall Super-A tractor, will work in row spacings as follows: six 10-inch, five 12-inch, four 14 or 16-inch, or three 18 or 20-inch rows. This cultivator, mounted on the Farmall Super-A tractor, requires one 512 280 R91 Universal Mounting Frame.

A Simple Ground Unit

A main tool bar to which five cultivating units and a row guide are attached comprises the ground working assembly. The identical cultivating units are simple. Each has an adjustable gauge wheel, which controls the operating depth, and short adjustable tool bars and tool clamps. All ground tools such as knife weeder blades and duck foots are available on special order.



Farmall Super-A
A-647 Vegetable Cultivator
Six-Row, Forward Mounted (Continued)



Ground Tools for Every Type of Soil

Regardless of the type of soil — muck, loam, gravel or stony land, or land infested with noxious weeds — there is a complete set of ground tools to suit individual requirements. The ground tools may be ordered as follows:

Knife Weeder Blades

For Muck and Loam Soils:

- 511 900 R1 knife weeder blade, R.H. (4½-in. cut).
- 511 901 R1 knife weeder blade, L.H. (4½-in. cut).
- 511 902 R1 knife weeder blade, R.H. (6-in. cut).
- 511 903 R1 knife weeder blade, L.H. (6-in. cut).

For Stony Soil:

- 511 906 R1 knife weeder blade, R.H. (4½-in. cut).
- 511 907 R1 knife weeder blade, L.H. (4½-in. cut).
- 511 908 R1 knife weeder blade, R.H. (6-in. cut).
- 511 909 R1 knife weeder blade, L.H. (6-in. cut).

The knife weeders for muck and loam are recommended for all soils except those containing a large amount of stone or gravel.

Duckfoots (5½ or 9-inch)

(Accommodates every soil condition)

- No. 25 duckfoot, 5½-in. cut.
- No. 26 duckfoot, 9-in. cut.

Spring-Tooth Attachments

(For stone, root, and noxious-weed infested soils. Available in single, double, and triple-tooth attachments. Can be slipped quickly and easily into the regular clamps.)

- No. 94 spring-tooth attachment, single tooth.
- No. 95 spring-tooth attachment, double tooth.
- No. 96 spring-tooth attachment, triple tooth.

Disk Weeder

- No. 113 disk weeder, 9-in.

A 9-in. disk weeder, available as an attachment, is excellent where a crust has formed and for working close-up to the row. Used in pairs on the front of each

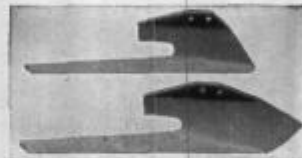
row unit, they slice the dirt and move it gently away from the plant. Other shovels, coming along in the rear, break the crust and push the loose soil back in around the plant.

Suggested Tool Combinations

(Permit cultivating six 10-inch, five 12-inch, four 14 or 16-inch, or three 18 or 20-inch rows.)

Muck and Loam Soils

- Five 511 900 R1 knife weeder blades, R.H. (4½-in. cut).
- Five 511 901 R1 knife weeder blades, L.H. (4½-in. cut).
- Four 511 902 R1 knife weeder blades, R.H. (6-in. cut).
- Four 511 903 R1 knife weeder blades, L.H. (6-in. cut).
- Five No. 25 duck feet (5½-in. cut).
- Three No. 26 duck feet (9-in. cut).



Illust. 1 — The lower knife weeder blade is for muck and loam soil. The upper blade is for stony soil. Ground tools are priced separately and should be ordered by number.

Stony Soil

- Five 511 906 R1 knife weeder blades, R.H. (4½-in. cut).
- Five 511 907 R1 knife weeder blades, L.H. (4½-in. cut).
- Four 511 908 R1 knife weeder blades, R.H. (6-in. cut).
- Four 511 909 R1 knife weeder blades, L.H. (6-in. cut).
- Five No. 25 duck feet (5½-in. cut).
- Three No. 26 duck feet (9-in. cut).

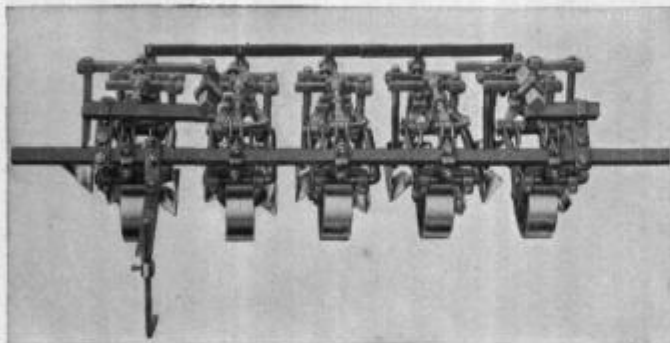
Spring-Tooth Combinations

(Permit cultivating six 10-inch, five 12-inch, four 14 or 16-inch or three 18 or 20-inch rows with spring teeth.)

- Fifteen No. 94 spring-tooth attachments, single tooth.
- Five No. 95 spring-tooth attachments, double tooth.
- Four No. 96 spring-tooth attachments, triple tooth.



Farmall Super-A
A-647 Vegetable Cultivator
Six-Row, Forward Mounted (Continued)



Illust. 1 — A-647 six-row vegetable cultivator ground unit is easily adjusted on the tool bar for various row spacings. The individual tool bar clamps are also adjustable.

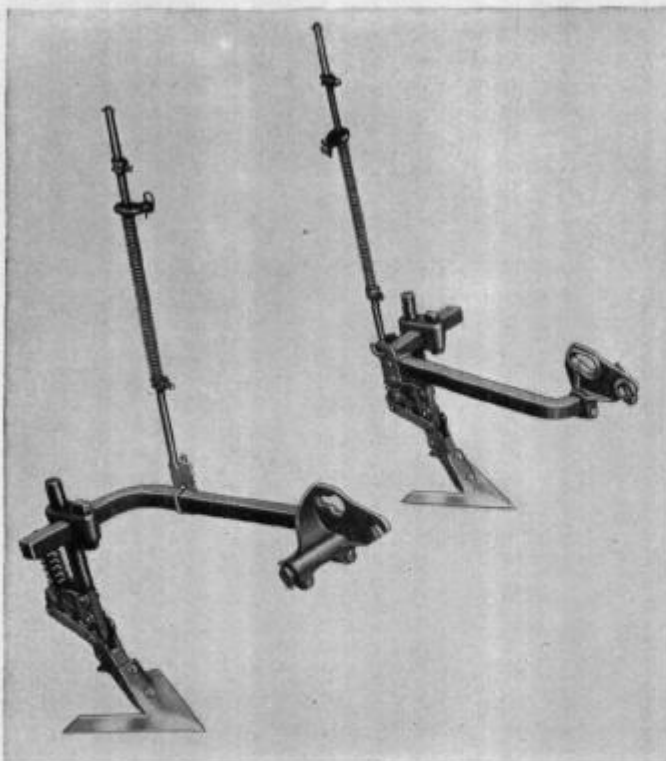
Rear Track Sweep

The tractor rear wheel tracks may be removed by using the rear section which is regular equipment on the A-144 cultivator. It is special equipment when purchased with the A-647. If the purchaser does not have this rear section, it may be ordered as follows:

512 274 R9I rear track sweep attachment.

A rockshaft is required to lift the above attachment. It is listed as follows:

512 281 R9I Rear (rigid) Rockshaft.



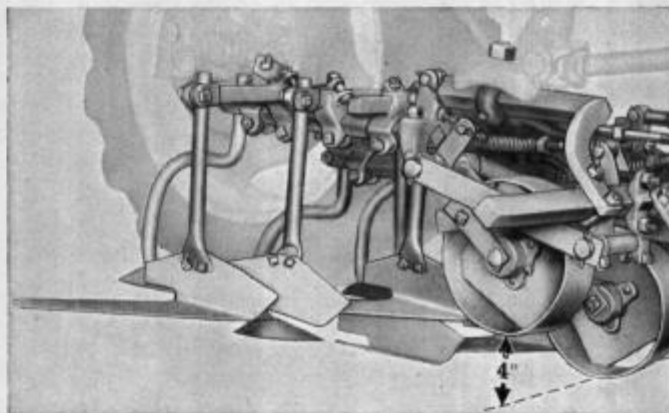
Illust. 2 — The rear track sweep shown here is regular equipment on the A-144 cotton and corn cultivator. The Universal Rockshaft is required for lifting the rear sweep attachment.

If the purchaser contemplates buying an A-189 one-furrow, two-way plow it is suggested that he order the rear (split) rockshaft. It is listed as follows:

512 454 R9I Rear (split) Rockshaft

Setting the Row Spacing

Adjusting the spacing of the cultivating units on the main tool bar is simple and easy. Just loosen the bolts holding each one in place on the tool bar, slide the units to the row spacing desired, and retighten the bolts. A pivot device allows each cultivating unit to float independently so that it is free to follow the exact contours of the ground as regulated by the gauge wheel. Jockey bars link the units together to assure that the units are held accurately to the row spacings.



Illust. 3 — A pivot device on the A-647 six-row vegetable cultivator allows each cultivating unit to float independently. Each unit is free to follow exactly the contours of the ground.

Quick-Change

Attaching the cultivator to the tractor is simplicity itself. Just slide it under the tractor. Using Farmall Touch-Control, lower the Universal Mounting Frame, slip the main tool bar support arms into the Universal Mounting Frame gang heads. Tighten the two tapered nuts

Easy to Operate

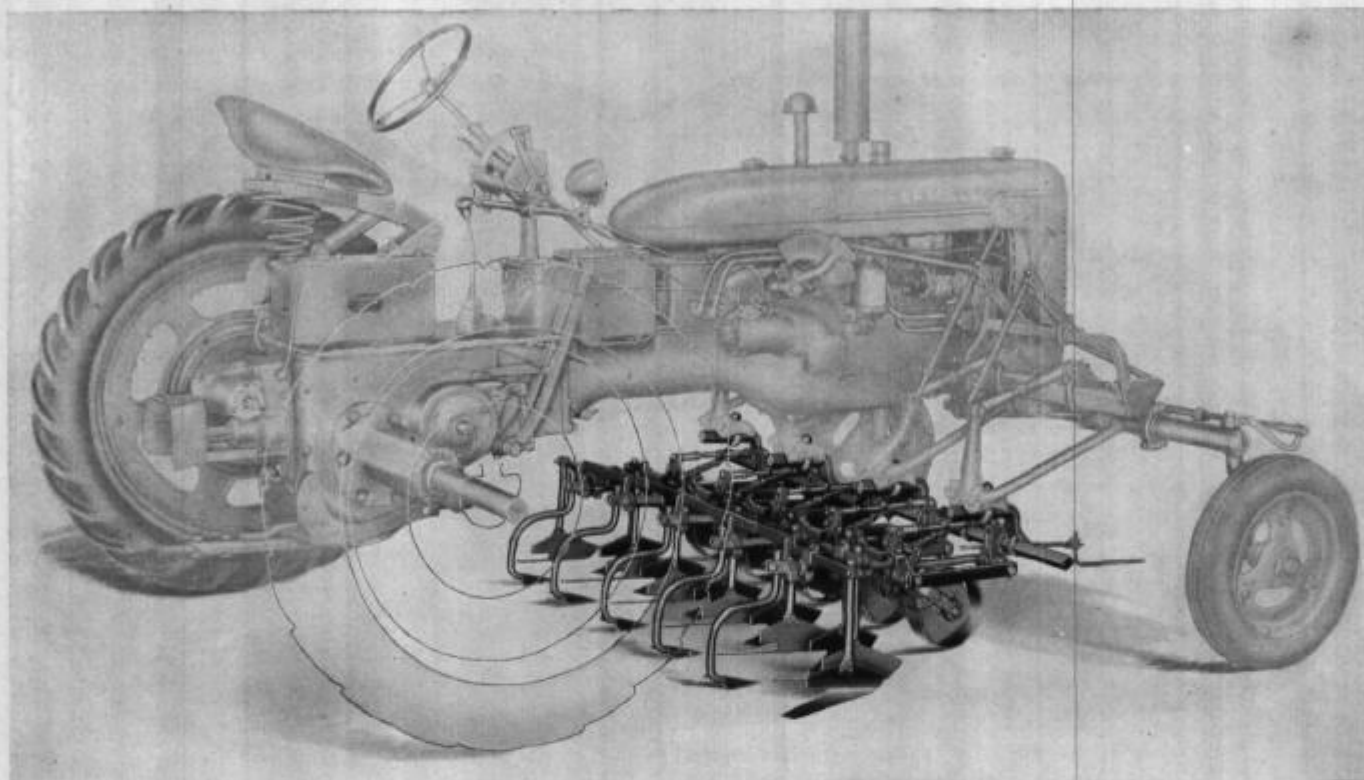
Here is a sturdy, simple, cultivator and tractor combination that is the ultimate in simplicity of operation. Farmall Touch-Control raises and lowers the unit with just the flick of a finger. Each easy-to-adjust gauge wheel holds its cultivating unit to the selected operating depth. Unobstructed vision (Culti-Vision) permits the operator to see the work. He can ride speedily down the rows, even rows of tiny seedlings, and do a close-up job of cultivating in any crop or soil condition.



Farmall C

C-647 Vegetable Cultivator

Six-Row, Forward-Mounted



Illust. 1 — C-647 six-row vegetable cultivator equipped with 6-inch knife weeder blades and 5½-inch duckfoots.

- Saves time and labor, reduces cost of commercial vegetable growing.
- Matches the row spacings of Farmall C forward-mounted vegetable planter.
- Quick-change attached to Universal Mounting Frame.
- Accurately controlled, multiple-row cultivating units.
- Touch-Control raises and lowers units.
- Wide selection of ground tools for working all the soil and close up to small plants.

The C-647 cultivator can be adapted to any system of row spacing established with the C-674 vegetable planter. Cultivator and planter thus provide a complement of equipment that assures maximum efficiency in the growing of vegetables on a commercial scale.

The C-647 is a forward-mounted unit quick-attached to the Universal Mounting Frame on the tractor. It is necessary that the tractor be equipped with wide-tread front axle. A special 88-inch extended rear axle is required when cultivating rows on beds where the tractor wheels are set for 84-inch tread. The cultivator will cultivate a maximum of six 12-inch, five 14-inch, four 18-inch or three 24-inch rows with tractor equipped with regular rear axle. When the tractor is equipped with special 88-inch axle the following maximum row

spacings can be cultivated: six 12-inch, five 16-inch, four 18-inch or three 24-inch.

The cultivator consists of five cultivating units flexibly attached by means of parallel linkage to the main carrying bars. Each unit contains an adjustable gauge wheel which controls the cultivating depth; a pressure spring which holds the unit to its work; and a tool bar provided with tool bar extensions, knife weeder standards, and a rear clamp to accommodate a duckfoot standard.

Ground tools are supplied only as ordered. Two types of knife weeder blades are available — one for ordinary (muck and loam) soils, the other for stony soil. Duckfoots are available in 5½ or 9-inch cut; spring-tooth attachments in single, double or triple tooth; and disk weeders in 9-inch size.

A row guide is regularly supplied for ease in following rows of small plants. The rear section of the C-244 cultivator (see page 222) can be used to remove the tractor wheel tracks. If the owner does not have a C-244 cultivator, the rear section can be ordered as an attachment for the vegetable cultivator.

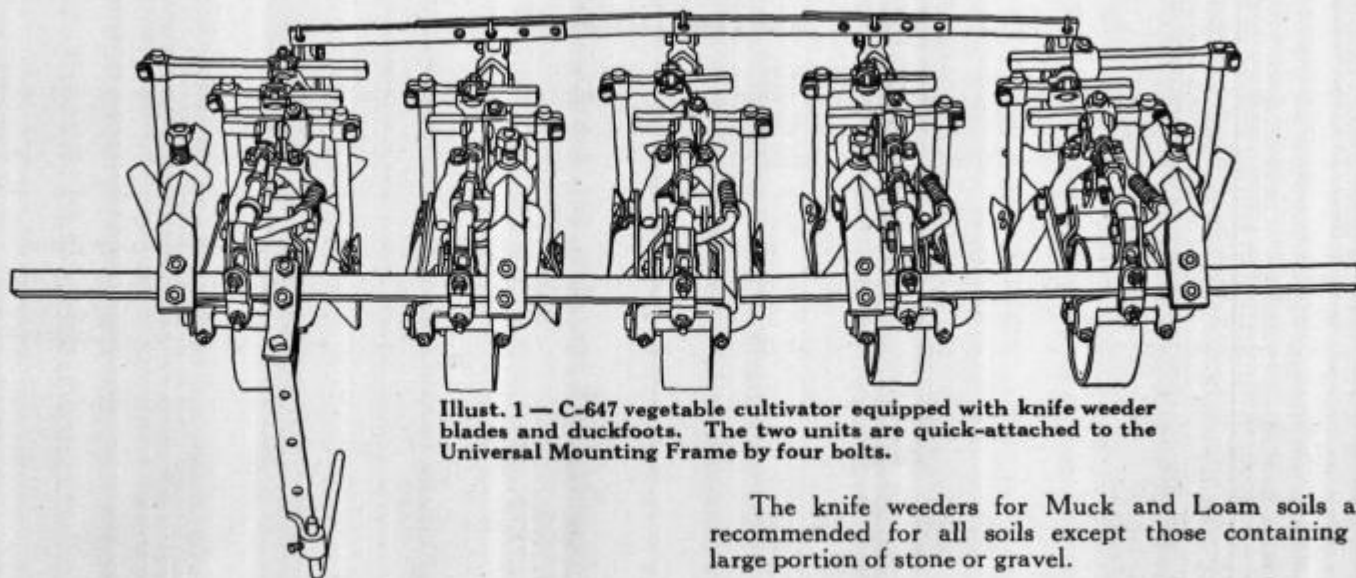
Specifications

Description	Maximum Number Rows Cultivated	Universal Unit Required	Net Weight (Approx.)
C-647 Vegetable Cultivator	Six 12-inch	Mounting Frame	*280 lb.
Corn and Cotton Type Rear Section (Special)	.....	Rear Rock-shaft (Optional)	.....

*Ground Tools not included.



Farmall C
C-647 Vegetable Cultivator
(Continued)



Illust. 1 — C-647 vegetable cultivator equipped with knife weeder blades and duckfoots. The two units are quick-attached to the Universal Mounting Frame by four bolts.

Regular Equipment

Gauge wheels. Knife weeder standards. Clamps for duckfoots. Row guide.

Special Equipment

Corn and cotton type cultivator rear section with rocker arm bundle or with pressure rods for use with Universal Rear Rockshaft, as ordered.

The following ground tools are available on order:

511 900 R1 Knife Weeder Blade, R.H. (4½-in. cut)	For Muck and Loam Soils
511 901 R1 Knife Weeder Blade, L.H. (4½-in. cut)	
511 902 R1 Knife Weeder Blade, R.H. (6-in. cut)	
511 903 R1 Knife Weeder Blade, L.H. (6-in. cut)	
511 906 R1 Knife Weeder Blade, R.H. (4½-in.)	For Stony Soil
511 907 R1 Knife Weeder Blade, L.H. (4½-in.)	
511 908 R1 Knife Weeder Blade, R.H. (6-in.)	
511 909 R1 Knife Weeder Blade, L.H. (6-in.)	
No. 25 Duckfoot (5½-in.)	
No. 26 Duckfoot (9-in.)	
No. 94 Spring Tooth Attachment (Single Tooth)	
No. 95 Spring Tooth Attachment (Double Tooth)	
No. 96 Spring Tooth Attachment (Triple Tooth)	
No. 113 Disk Weeder (9-in.)	

Suggested Tool Combinations

Suggested tools to permit cultivating six 12-inch, five 14-inch or four 18-inch rows are as follows:

Muck and Loam Soils:

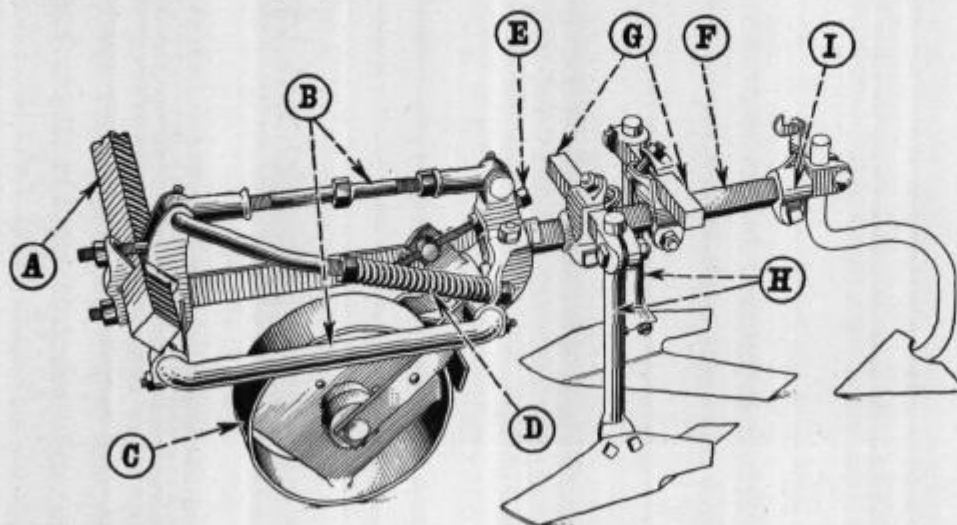
For 6 rows:	5—511 900 R1 Knife Weeder Blade, R.H. (4½-in.)
	5—511 901 R1 Knife Weeder Blade, L.H. (4½-in.)
For 5 rows:	4—511 902 R1 Knife Weeder Blade, R.H. (6-in.)
	4—511 903 R1 Knife Weeder Blade, L.H. (6-in.)
For 6 or 5 rows:	5—No. 25 Duckfoot (5½-in.)
For 4 rows:	3—No. 26 Duckfoot (9-in.)

Stony Soil:

For 6 rows:	5—511 906 R1 Knife Weeder Blade, R.H. (4½-in.)
	5—511 907 R1 Knife Weeder Blade, L.H. (4½-in.)
For 5 rows:	4—511 908 R1 Knife Weeder Blade, R.H. (6-in.)
	4—511 909 R1 Knife Weeder Blade, L.H. (6-in.)
For 6 or 5 rows:	5—No. 25 Duckfoot (5½-in.)
For 4 rows:	3—No. 26 Duckfoot (9-in.)

Suggested Spring Tooth Attachments to permit cultivating six 12-inch, five 14-inch and four 18-inch rows are as follows:

For 6 rows:	15—No. 94 Spring Tooth Attachment (Single Tooth)
For 5 rows:	5—No. 95 Spring Tooth Attachment (Double Tooth)
For 4 rows:	4—No. 96 Spring Tooth Attachment (Triple Tooth)



Illust. 2 — Cultivating unit indicating component parts regularly furnished. A, indicates main carrying bar. B, parallel linkage. C, gauge wheel. D, pressure spring. E, depth adjustment. F, tool bar. G, tool bar extensions. H, knife weeder standards. I, duckfoot clamp. The knife weeder blades and duckfoots are supplied on order.



Ground Working Tools

For Beet and Bean Cultivators, Vegetable Cultivators and Cultivator Tool Bar Attachments

Beet and bean cultivators, vegetable cultivators, and tool bar attachments to convert corn and cotton cultivators for narrow-row cultivation, are designed for a wide variety of conditions. They are regularly equipped with a specified number of clamps, but it is necessary that the purchaser indicate the type of clamp desired. The type of clamp ordered is determined by the size of the tool bar used on the cultivator and the size and shape of the standards on the ground working

tools selected. Additional clamps will be supplied on special order.

Ground working tools are furnished on special order, enabling the purchaser to make a selection adapted to his individual requirements.

On the following pages are illustrations and listings of the clamps which can be obtained for the machines, the various ground working tools and irrigating shovel attachments for use with these clamps, and cultivator shields.



Illust. 1



Illust. 2



Illust. 3



Illust. 4

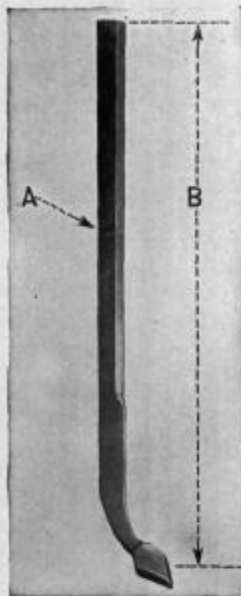
Tool Clamps

	Illust. No. 1	Illust. No. 2				Illust. No. 3	Illust. No. 4
	PO 13588 Clamp	PO 26939 Clamp	28309 BA Clamp	28310 B Clamp	28643 B Heavy-Duty Clamp	29601 BA Clamp	30200 BB Clamp
	For =	For 2 in.	For 1 1/4 and 1 3/8 in.			For 1 1/4 and 1 3/8 in.	
	Tool Bars	Tool Bars	Tool Bars			Tool Bars	
CULTIVATORS ON WHICH USED	For 1 1/4 x 3/2 in. Standards	For 2 x 5/8 in. Standards	For 1 1/2 x 9/16 in. Standards (can use 1 1/2 x 3/2 in.)	For 2 x 5/8 in. Standards	For 2 x 5/8 in. Standards	29602 B, 1 1/8 in. dia. Round Standard or any 1 1/8 or 1 1/4 in. dia. Spring Trip or Friction Break Standard.	For 1 1/2 x 9/16 in. Standards
Nos. 3-C, 3-D, No. 8 Cultivators and No. 6 Tool Bar Attachment for HM-221.....	X						
A-136 and A-138 ("R" Rear Section), Cub-252, HM-240 (No. 26 Tool Equipment—Rear Section), B-435, BN-435, A-437, A-452, C-452, HM-639, No. 7 Tool Bar Attach- ment (For B-221, BN-221, HM-221, B-236, HM-236, B-238, BN-238, HM-238, 238-H and 238-G), No. 8 Tool Bar Attachment (For A-136, and A-138), No. 9 Tool Bar Attach- ment (For HM-242 and HM-242-A), No. 10 Tool Bar Attachment (For BN-242) and No. 11 Tool Bar Attachment (For HM-240).....			X	X	X	X	X
HM-243 (Rear Section) and HM-639 (Extra Heavy-Duty "W" Type Tool Bar Rear Section).....		X					



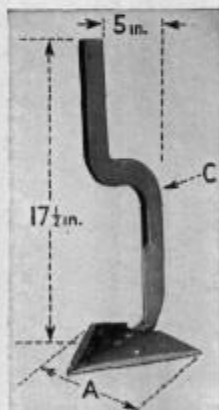
Ground Working Tools

(Continued)



Diamond Points

Diamond Point No.	No. 1	No. 6	No. 7
Standard Size "A".....	1 1/4 x 1/2 in.	1 1/2 x 9/16 in.	2 x 5/8 in.
Standard Length "B".....	18 in.	24 in.	25 in.
Standard No.....	PO 13347	26868 B	30736 B
Point No. (1 1/2 in. wide).....	PO 26869	PO 26869	PO 26869
Cultivators on Which Used			
Nos. 3-C, 3-D, No. 8 Cultivators and No. 6 Tool Bar Attachment for HM-221.....	X		
A-136 and A-138 ("R" Rear Section), Cub-252, HM-240 (No. 26 Tool Equipment—Rear Section), B-435, BN-435, A-437, A-452, C-452, HM-639, No. 7 Tool Bar Attachment (For B-221, BN-221, HM-221, B-236, HM-236, B-238, BN-238, HM-238, 238-H and 238-G), No. 8 Tool Bar Attachment (For A-136 and A-138), No. 9 Tool Bar Attachment (For HM-242 and HM-242-A), No. 10 Tool Bar Attachment (For BN-242) and No. 11 Tool Bar Attachment (For HM-240).....		X	X



Duck Feet

Duck Foot No.	No. 17	No. 18	No. 21	No. 22	No. 25	No. 26
Standard Size "C".....	1 1/4 x 1/2 in.	1 1/4 x 1/2 in.	1 1/2 x 9/16 in.	1 1/2 x 9/16 in.	3/8 in. rd.	3/8 in. rd.
Standard No.....	S 5939	S 5939	28617 B	28617 B	512 268 R1	512 268 R1
Shovel Width "A".....	7 1/2 in.	9 in.	7 1/2 in.	9 in.	5 1/2 in.	9 in.
Shovel No.....	PO 20246	PO 20247	PO 20246	PO 20247	30621 B	PO 20247
Cultivators on Which Used						
Nos. 3-C, 3-D, No. 8 Cultivators and No. 6 Tool Bar Attachment for HM-221.....	X	X				
A-136 and A-138 ("R" Rear Section), Cub-252, HM-240 (No. 26 Tool Equipment—Rear Section), B-435, BN-435, A-437, A-452, C-452, HM-639, No. 7 Tool Bar Attachment (For B-221, BN-221, HM-221, B-236, HM-236, B-238, BN-238, HM-238, 238-H and 238-G), No. 8 Tool Bar Attachment (For A-136 and A-138), No. 9 Tool Bar Attachment (For HM-242 and HM-242-A), No. 10 Tool Bar Attachment (For BN-242) and No. 11 Tool Bar Attachment (For HM-240).....			X	X		
Cub-447, A-647 and C-647.....					X	X



Ground Working Tools

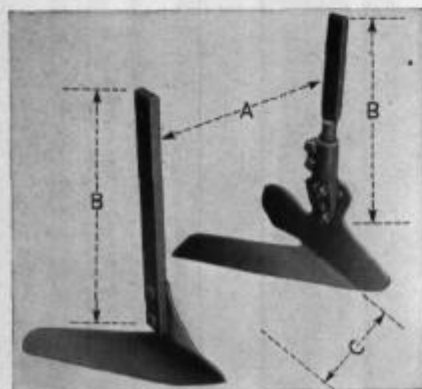
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Knife Weeders

Knife Weeder No.	No. 2	No. 3	No. 12	No. 13	No. 14	No. 18*	No. 19*
Standard Size "A".....	1 1/4 x 1/2 in.	1 1/4 x 1/2 in.	1 1/4 x 1/2 in.	1 1/4 x 1/2 in.	1 1/4 x 1/2 in.	1 1/4 x 1/2 in.	1 1/4 x 1/2 in.
Standard Length "B".....	12 11/16 in.	12 11/16 in.	12 11/16 in.	12 11/16 in.	12 11/16 in.	11 1/2 in.	11 1/2 in.
Standard No.....	S 7846	S 7846	S 7846	S 7846	S 7846	PO 20191 A	PO 20191 A
Blade Size "C".....	5 in.	6 1/2 in.	6 in.	7 in.	8 in.	6 1/2 in.	7 1/2 in.
Blade, R.H. No.....	S 8292	S 8290	26276 B	26278 B	25900 B	PO 20192	PO 20194
Blade, L.H. No.....	S 8291	S 8289	26277 B	26279 B	25901 B	PO 20193	PO 20195
Blade Pitch "D".....	22°	22°	14°	14°	14°	15°	15°
Cultivators on Which Used							
Nos. 3-C, 3-D, No. 8 Cultivators and No. 6 Tool Bar Attachment for HM-221.....	X	X	X	X	X	X	X

Knife Weeder No.	No. 22	No. 23	No. 27*	No. 28*	No. 29*	No. 30	No. 31
Standard Size "A".....	1 1/2 x 9/16 in.	1 1/2 x 9/16 in.	1 1/2 x 9/16 in.	1 1/2 x 9/16 in.	1 1/2 x 9/16 in.	1 1/2 x 9/16 in.	1 1/2 x 9/16 in.
Standard Length "B".....	13 11/16 in.	13 11/16 in.	11 1/2 in.	11 1/2 in.	11 1/2 in.	13 11/16 in.	13 11/16 in.
Standard No.....	28616 B	28616 B	510 339 R1	510 339 R1	510 339 R1	28616 B	28616 B
Blade Size "C".....	5 in.	6 1/2 in.	6 1/2 in.	7 1/2 in.	5 1/2 in.	7 in.	8 in.
Blade, R.H. No.....	S 8292	S 8290	PO 20192	PO 20194	510 766 R1	26278 B	25900 B
Blade, L.H. No.....	S 8291	S 8289	PO 20193	PO 20195	510 765 R1	26279 B	25901 B
Blade Pitch "D".....	22°	22°	15°	15°	15°	14°	14°
Cultivators on Which Used							
A-136 and A-138 ("R" Rear Section), Cub-252, HM-240 (No. 26 Tool Equipment—Rear Section), B-435, BN-435, A-437, A-452, C-452, HM-639, No. 7 Tool Bar Attachment (For B-221, BN-221, HM-221, B-236, HM-236, B-238, BN-238, HM-238, 238-H and 238-G), No. 8 Tool Bar Attachment (For A-136 and A-138), No. 9 Tool Bar Attachment (For HM-242 and HM-242-A), No. 10 Tool Bar Attachment (For BN-242) and No. 11 Tool Bar Attachment (For HM-240).....	X	X	X	X	X	X	X

*Adjustable Standard.



Illust. 1—Knife weeders with non-adjustable standard at left and adjustable standard at right.

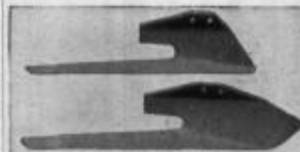


Illust. 2—Rear view of knife weeder illustrating the pitch of the blade.

Knife Weeder Blades For use on Cub-447, A-647 and C-647 Vegetable Cultivators

For Muck and Loam Soils				
Part No.	511 900 R1 Right	511 901 R1 Left	511 902 R1 Right	511 903 R1 Left
Size "C"	4 1/2 in.	4 1/2 in.	6 in.	6 in.
For Stony Soil				
Part No.	511 906 R1 Right	511 907 R1 Left	511 908 R1 Right	511 909 R1 Left
Size "C"	4 1/2 in.	4 1/2 in.	6 in.	6 in.

Illust. 3—Stub nose knife weeder blade at top is for stony soil and knife weeder blade for muck and loam soils is illustrated at bottom.



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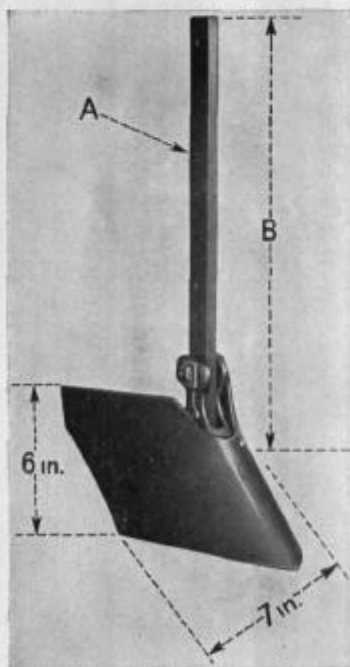
Ground Working Tools

(Continued)



Disk Weeders

Disk Weeder No.	No. 106	No. 109	No. 111	No. 112	No. 113
Dia. of Disk "A".....	10 in.	12 in.	12 in.	10 in.	9 in.
Disk No.....	S 7768	S 2200	S 2200	S 7768	PO 28423
Size of Standard "C".....	1 1/4 x 1/2 in.	1 1/4 x 1/2 in.	1 1/2 x 9/16 in.	1 1/2 x 9/16 in.	3/8 in. rd.
Length of Standard "B".....	12 11/16 in.	12 11/16 in.	13 11/16 in.	13 11/16 in.	10 1/2 in.
Standard No.....	S 7846	S 7846	28616 B	28616 B	512 693 R1
Cultivators on Which Used					
No. 3-C, 3-D, No. 8 Cultivators and No. 6 Tool Bar Attachment for HM-221.....	X	X			
A-136 and A-138 ("R" Rear Section), Cub-252, HM-240 (No. 26 Tool Equipment—Rear Section), B-435, BN-435, A-437, A-452, C-452, HM-639, No. 7 Tool Bar Attachment (For B-221, BN-221, HM-221, B-236, HM-236, B-238, BN-238, HM-238, 238-H and 238-G), No. 8 Tool Bar Attachment (For A-136 and A-138), No. 9 Tool Bar Attachment (For HM-242 and HM-242-A), No. 10 Tool Bar Attachment (For BN-242) and No. 11 Tool Bar Attachment (For HM-240).....			X	X	X
Cub-447, A-647 and C-647.....					



Irrigating Shovel Attachments

Irrigating Shovel Attachment No.	No. 11	No. 12	No. 123 Shovel
Standard Size "A".....	1 1/4 x 1/2 in.	1 1/2 x 9/16 in.	
Standard Length "B".....	17 in.	17 in.	
Standard No.....	S 5457	30087 B	
Shovel No.....	No. 123	No. 123	No. 123 with 16237 B, 3/8 x 2 1/2 in. No. 3 Plow Bolt (Special Head)
Cultivators on Which Used			
Nos. 3-C, 3-D, No. 8 Cultivators and No. 6 Tool Bar Attachment for HM-221.....	X		X
A-136 and A-138 ("R" Rear Section), Cub-252, HM-240 (No. 26 Tool Equipment—Rear Section), B-435, BN-435, A-437, A-452, C-452, HM-639, No. 7 Tool Bar Attachment (For B-221, BN-221, HM-221, B-236, HM-236, B-238, BN-238, HM-238, 238-H and 238-G), No. 8 Tool Bar Attachment (For A-136 and A-138), No. 9 Tool Bar Attachment (For HM-242 and HM-242-A), No. 10 Tool Bar Attachment (For BN-242) and No. 11 Tool Bar Attachment (For HM-240).....		X	X

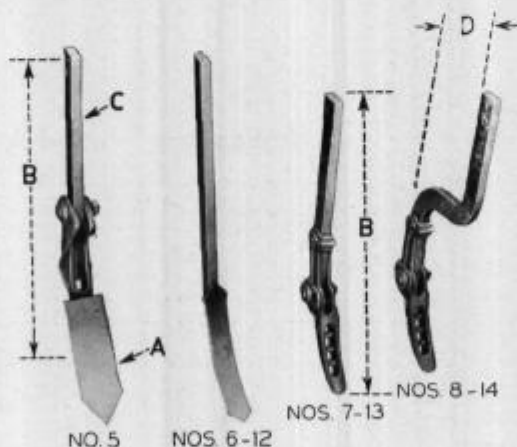


Ground Working Tools

(Continued)

Deer Tongues

Deer Tongue No.	No. 5	No. 6	No. 7	No. 8	No. 12	No. 13	No. 14
Standard Size "C".....	1 1/4 x 1/2 in.	1 1/4 x 1/2 in.	1 1/4 x 1/2 in.	1 1/4 x 1/2 in.	1 1/2 x 3/16 in.	1 1/2 x 3/16 in.	1 1/2 x 3/16 in.
Standard Length "B".....	17 1/2 in.	17 1/4 in.	16 3/8 in.	18 in.	17 1/4 in.	16 3/8 in.	18 in.
Standard Offset "D".....				5 in.			5 in.
Standard No.....	S 8842	PO 11526	S 8842	PO 13334	28615 B	511 728 R1	511 729 R1
Shovel No.....	No. 136	PO 11525 A	As Ordered 2204 B 25702 B	As Ordered 2204 B 25702 B	PO 11525 A	As Ordered 2204 B 25702 B	As Ordered 2204 B 25702 B
Shovel Size "A".....	2 x 6 1/4 in.	1 1/4 x 8 1/2 in.			1 1/4 x 8 1/2 in.		
Cultivators on Which Used							
Nos. 3-C, 3-D, No. 8 Cultivators and No. 6 Tool Bar Attachment for HM-221.....	X	X	X	X			
A-136 and A-138 ("R" Rear Section), Cub-252, HM-240 (No. 26 Tool Equipment—Rear Section), B-435, BN-435, A-437, A-452, C-452, HM-639, No. 7 Tool Bar Attachment (For B-221, BN-221, HM-221, B-236, HM-236, B-238, BN-238, HM-238, 238-H and 238-G), No. 8 Tool Bar Attachment (For A-136 and A-138), No. 9 Tool Bar Attachment (For HM-242 and HM-242-A), No. 10 Tool Bar Attachment (For BN-242) and No. 11 Tool Bar Attachment (For HM-240).....					X	X	X



Cultivator Shields



No. 72 Shield.



No. 80 Shield
(left-hand unit)

Cultivators on Which Used	No. 72	No. 80*
Cub-252, A-437, A-452, C-452, No. 7 Tool Bar Attachment (For B-221, BN-221, HM-221, B-236, HM-236, B-238, BN-238, HM-238, 238-H and 238-G), No. 9 Tool Bar Attachment (For HM-242 and HM-242-A), No. 10 Tool Bar Attachment (For BN-242) and No. 11 Tool Bar Attachment (For HM-240).....		X
B-435, BN-435, A-437, HM-639, No. 8 Tool Bar Attachment (For A-136 and A-138).....	X	

*No. 80 shield includes one right-hand and one left-hand shield unit.

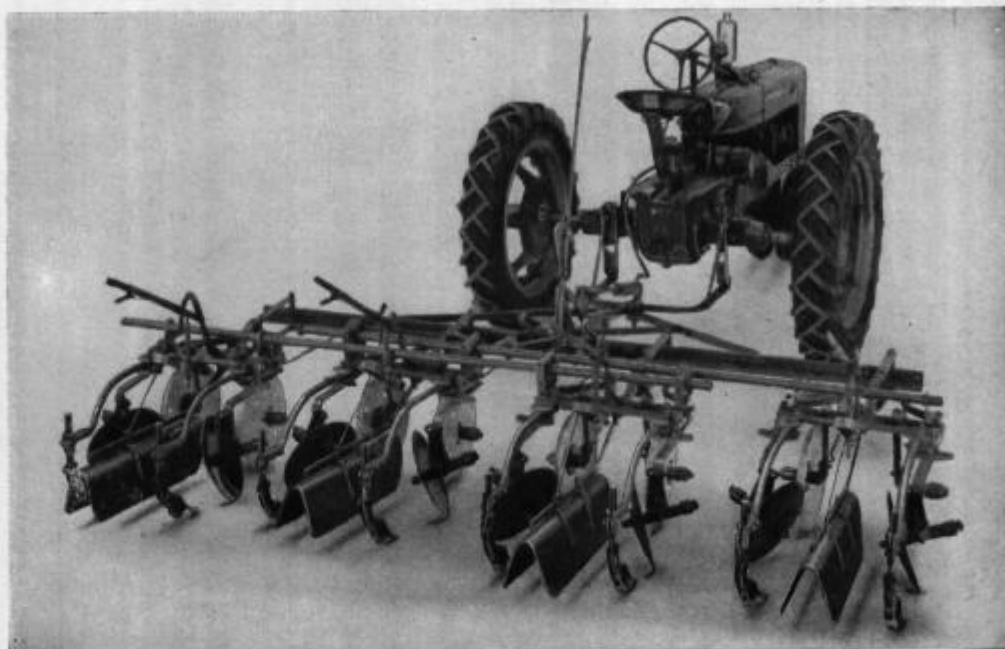


F-35 and FA-40 Lister Cultivators

(Two-Row and Four-Row)

The F-35 and FA-40 are trail-behind cultivators designed to cultivate row crops planted in furrows spaced from 38 to 40 inches apart. The two cultivators are similar in construction except that the F-35 is designed for two rows and the FA-40 for four rows. The F-35 can be used with such tractors as the Farmalls H and M and the FA-40 with Farmall-M or tractors of corresponding power.

Unit construction. The cultivators consist of individual ground working units, pivot attached to a common hitch frame. Each unit consists of a pair of furrow guide wheels, two disks, two shovels, and a long enclosed shield. Each unit has a lever for adjusting the shovels in relation to the disks. The disks



Illust. 1—The FA-40 four-row lister cultivator can be supplied with either power lift (shown above) or with hand lift.

can be set to throw the soil away from the plants for first cultivation and toward the plants for subsequent cultivation.

Each unit follows its own row. The cultivator units are free to move sideways, yet always remain square with the row, because of a link which is parallel with the draft bar. The two gang-type guide wheels can be adjusted to fit snugly in the furrow so that each unit accurately follows its row.

Gang stabilizers. Tilting of the units on uneven ground is prevented by gang stabilizers. The stabilizers allow the gangs to move sidewise without tilting.

Short-coupled. The machine is short coupled, yet the gangs do not interfere with one another, even on short turns.

Hand or power lift. The F-35 is available as a hand lift only, whereas the FA-40 is available either as a hand lift or power lift. The hand lift lever also regulates the depth of the cultivating unit. The power lift cultivator requires a hydraulic cylinder which is mounted on the hitch frame and can be used only with Farmall Lift-All.

Regular Equipment

Adjustable pin-break shovel standards. 16-in. disks. No. 32 shields. Hand lift for F-35. Hand or power lift for FA-40, as specified.

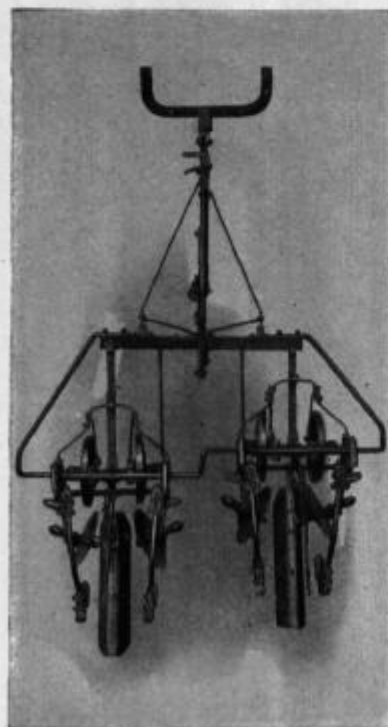
Special Equipment

Shovel attachments for use in place of disks. Spring trip shovel legs. POKA-7, 36-in. knife attachment. POKA-12, 27-in. knife attachment. POKA-14, 36-in. right blade and 27-in. left blade knife attachment.

Note: The F-35 cultivator requires one POKA-7 and one POKA-14. The FA-40 cultivator requires two POKA-7, one POKA-12 and one POKA-14.

Specifications

Cultivator Number	No. of Rows	Row Spacing	Type Lift	Net Weight (Approx.)
F-35	2	38 to 44-in.	Hand	736 lb.
FA-40	4	38 to 44-in.	Hand	1463 lb.
FA-40	4	38 to 44-in.	Power	1475 lb.
FA-40	4	38 to 44-in.	Power	1486 lb.



Illust. 2—Top view, F-35 cultivator, showing arrangement of gangs and stabilizer bar.



Volunteer One-Row Walking Cultivator

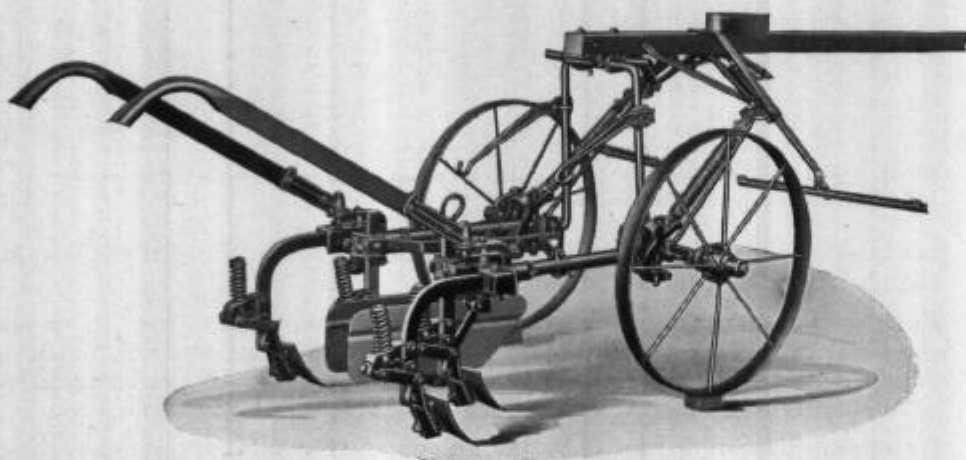
(Type A)

- Strongly braced equalizer causes each horse to pull its share of the load.
- Balance spring tension easily adjusted for light or heavy gangs.
- Pivot couplings allow free movement of the gangs.
- Extra heavy pipe beams permit tilting the gangs to conform to the slope of beds.
- Adjustable parallel rods on the pipe beam gangs assure a full-width cut.
- The extra-strong saddle arch can be adjusted quickly and easily for row width.

Volunteer cultivators have an established reputation for strength, long life and ease of operation. The axles may be adjusted for rows spaced from 34 to 44-in. apart. They are made of special cold-drawn steel. A reversible feature doubles their usable life.

The wheels, 30-in. in diameter, are equipped with cast hubs, removable wheel boxings, dust proof grease caps and dust proof sand bands. The heavy oval spokes are cast into the hubs and hot-riveted into the rims which assures that the wheels are always tight. The 21½-in. rims are concave in shape to resist sinking into the soil. The heavy balance springs help hold the shovels in the soil when working and assist in lifting when the gangs are raised past center.

The most popular gang equipment for this cultivator is the No. 213, a parallel type with four springs. If desired an extra shovel may be added to each gang which makes a 6-shovel cultivator. The parts on the right and left gangs are interchangeable.



Illust. 1—Type-A Volunteer cultivator. The tongue is located high on top of the axle arch which makes it easy to see the row being cultivated.

Regular Equipment

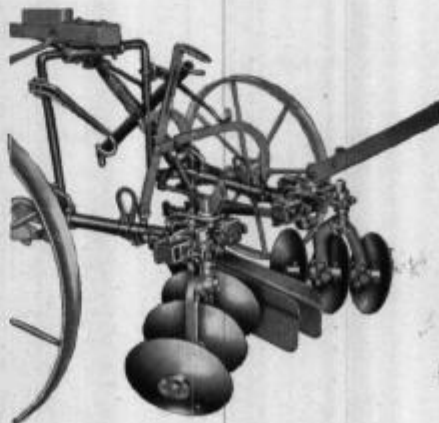
Neck yoke. Singletrees. Shields.

Special Equipment

2-in. flat tire wheels. No. 5, 13-in. disk hillers. No. 79 (8-tooth) spring tooth attachment with 30447-B tooth for shovel with clamp. No. 82 (8-tooth) spring-tooth attachment with 3861-B tooth for shovel with clamp. Disk attachment (six 12-in. disks). Jockey arch for use with disk attachment. Rotary shields.

Specifications

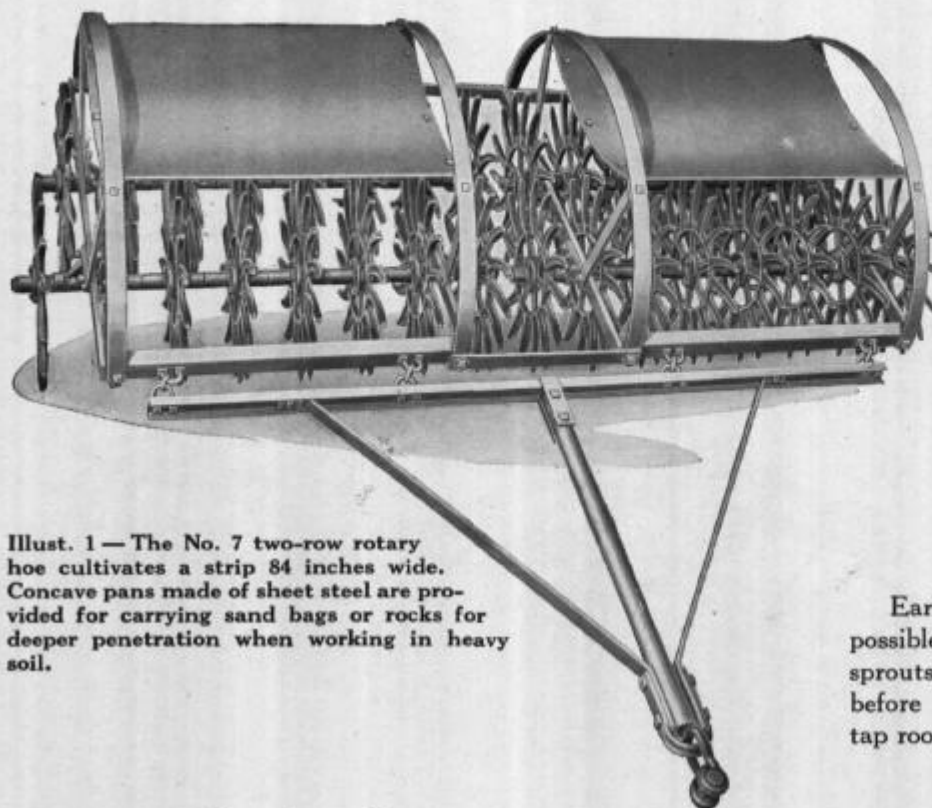
Cultivator	Ground Tools	Net Weight (Approx.)
Volunteer-A	No. 213 4-shovel equipment with spring trips	175 lb.



Illust. 2—Disk attachment supplied for use with the No. 213 gangs. Consists of two gangs of three 12-in. tempered steel disks, and jockey arch with adjustment lever.



No. 7 Rotary Hoe



Illust. 1 — The No. 7 two-row rotary hoe cultivates a strip 84 inches wide. Concave pans made of sheet steel are provided for carrying sand bags or rocks for deeper penetration when working in heavy soil.

Simple to Operate

The No. 7 rotary hoe is a simple, flexible machine designed for high-speed tractor operation. It is of all-steel construction with separate units to follow the contour of each row. Each point of the malleable spider wheels bears straight down on entering the soil, and pierces it without dragging or shoving soil chunks aside. As the soil is wedged in between the points it is gently crushed and pulverized.



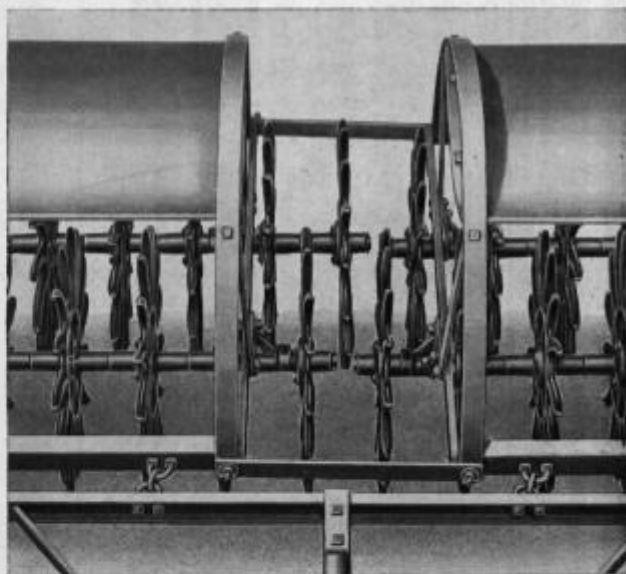
Illust. 3 — Detail showing arrangement of the spider wheels in two closely spaced ranks. Very few weeds will ever get by.

The Young-Crop Cultivator

The rotary hoe has no equal as a crust breaker and for blind cultivation in corn, soybeans, potatoes, wheat, oats and many other crops. It cultivates in and around the tender young plants long before any other implement can be used. The hoe stirs the soil close to the roots, allowing the air and sunlight to thoroughly warm the seedbed.

Gets the Weeds Before They Come Up

Early use of the rotary hoe makes it possible to expose the tender young weed sprouts to the sun which effectively kills them before they have a chance to put down tap roots.



Illust. 2 — Most weeds get their start near the surface. By using the rotary hoe as soon as the weeds begin to sprout, such weeds are easily dislodged and exposed to the sun.

Specifications

Description	Cultivating Width	Net Weight (Approx.)
No. 7 Rotary Hoe	84-in.	695 lb.



No. 1 Weeder-Mulchers

(12 and 18-Ft.)

The No. 1 weeder-mulcher is an excellent tool for breaking soil crusts and keeping the ground surface well mulched and free from weeds throughout the growing season. It is ideal for the cultivation of potatoes, corn, cotton, peas, peanuts, beans, onions, cabbages, etc. The finger teeth get the first crop of tiny weeds while they are easy to kill. From then on the implement is used after every rain or every seven to ten days if there is no rain, until the plants are well into the growing season. In potatoes the teeth are worked to a depth of $2\frac{1}{2}$ inches which tends to keep the roots from growing close to the surface. This forcing of the roots to grow deeper prevents them from drying out and reduces the number of sunburned potatoes.

The machine is carried on two wide-faced caster wheels and is attached to the drawbar by a two-point hitch. In turning at the ends of the rows, the weeder-mulcher can thus be maneuvered readily. Only two hitch pins are used in attaching or detaching the implement. Two levers are provided for regulating the depth of the teeth. Spring-pressure rods assure uniform penetration.

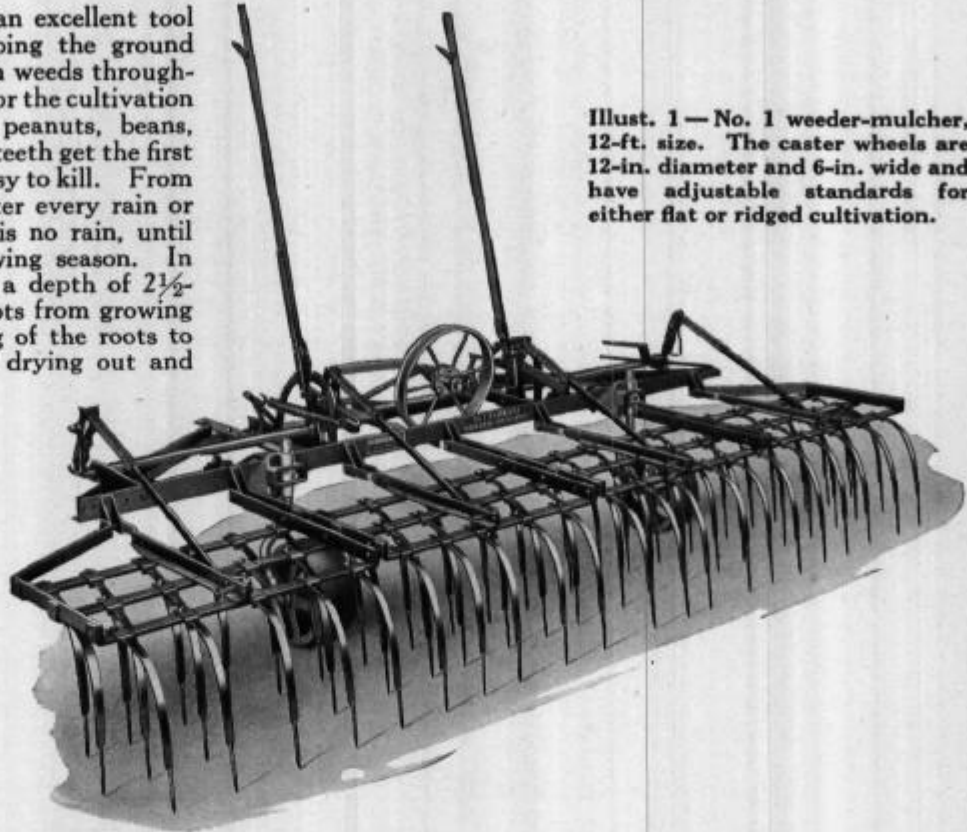
Easily Transported Through Gates and Lanes

In transport, the weeder-mulcher is pulled endwise from a hitch-bar provided at one side of the frame. The transport wheel is quickly lowered and the gangs are raised without changing a single bolt, nut or cotter pin.

Regular Equipment

Finger type weeder teeth.

Illust. 1 — No. 1 weeder-mulcher, 12-ft. size. The caster wheels are 12-in. diameter and 6-in. wide and have adjustable standards for either flat or ridged cultivation.



Special Equipment

Light spring teeth. Extension attachment to convert the 12-ft. machine to an 18-ft. machine.

Specifications

Model	Description	Net Weight (Approx.)
No. 1	Weeder-mulcher, 12 ft.....	654 lb.
No. 1	Weeder-mulcher, 18 ft.....	823 lb.



Illust. 2 — (left) The No. 1 weeder-mulcher can be rearranged quickly and easily for transporting along the highway or through narrow lanes or gates. The width of either the 12-ft. or the 18-ft. weeder-mulcher hooked up for transport is less than 5 ft.

Peanut Harvesting Equipment

The introduction of Farmall-mounted peanut harvesting equipment has greatly reduced the cost and labor of harvesting this important crop. For many years, peanuts were harvested principally with one-row plow-type diggers which merely lifted the peanuts out of the ground. The peanuts were then shaken, piled, and stacked by hand and, after curing, taken to the picking machine.

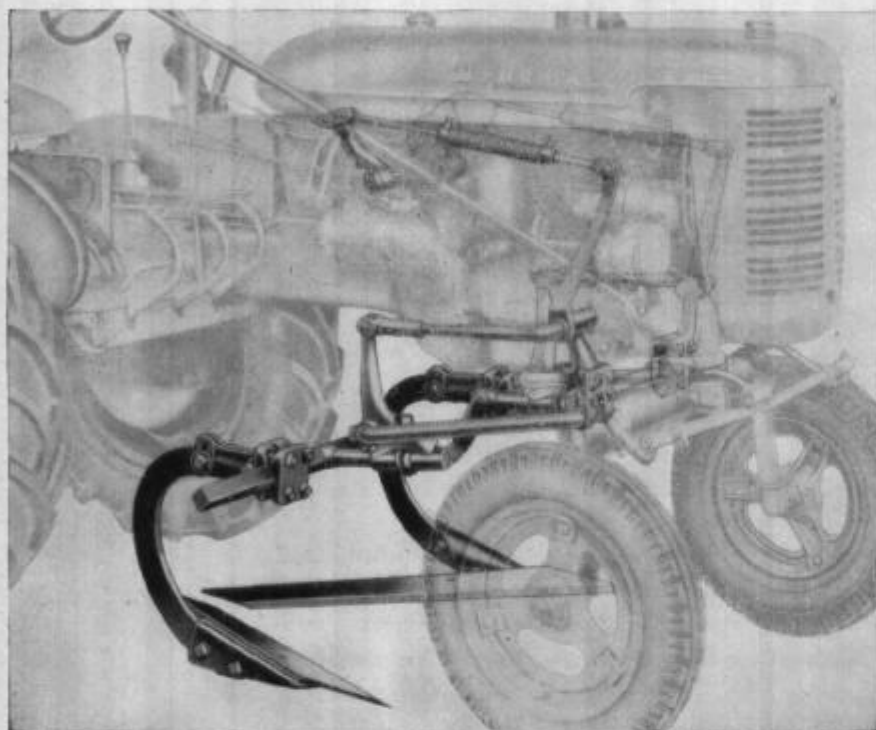
More recently, farmers began using tractor-mounted peanut blades to dig two rows at a time, after which the peanut plants were windrowed with a heavy-duty side-delivery rake. This latter method was not altogether satisfactory because vines in the windrow were tangled and rolled into ropy form, and too many peanuts were knocked off the vines. Now, with the Farmall digger and shaker combination, one man can lift, shake, and windrow two rows of peanuts simultaneously, thus greatly reducing time and labor. Moreover, the crop is handled gently to avoid nut loss, and the windrows are left in best condition for convenient stacking or for rapid curing.



Farmalls Super-A and C

A-10 and C-11 Peanut Diggers

Two-Row, Forward-Mounted



- For fast, efficient two-row digging.
- Quick-change attached to tractor Universal Front Mounting Frame.
- Raised, lowered, and working depth regulated by Farmall Touch-Control.
- Ample adjustments provided for regulating blade angle and suction.
- Blades easily removed for sharpening.

Illust. 1 — The A-10 digger mounted on Farmall Super-A tractor. This digger will handle two rows spaced 24 to 28 inches apart.

The A-10 and C-11 peanut diggers are simple, complete units designed for use with Farmall Super-A and C tractors equipped with Universal Front Mounting Frame and Touch-Control. The A-10 digger for Farmall Super-A will work in row spacings of 24 to 28 inches. The C-11 digger for Farmall C will work in rows spaced 28 to 38 inches.

Simple, Rugged Units

The digger units consist of two blades with standards and attaching tool bars. The blades are made of carbon steel and can be removed easily for sharpening or forging. Adjustments are provided for setting the blades at various cutting angles and for suction.

Efficient Digging

The digger blades are set at a slight tilt and are angled toward the inside, producing a combined slicing and lifting action. As they move through the ground they cut off the tap roots, loosen the soil and lift the peanuts gently out of the ground. The vines then can be windrowed, bunched or stacked, as preferred.

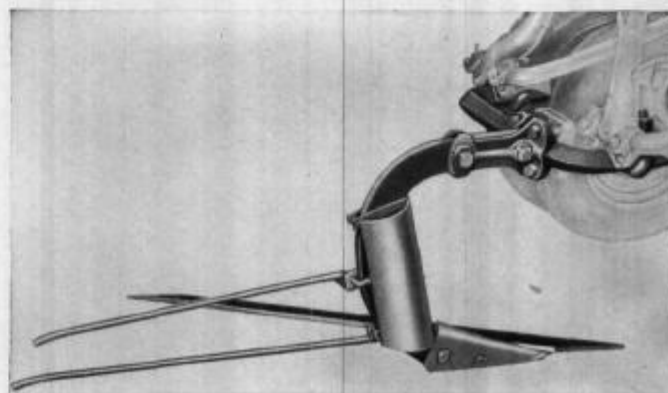
Standard Shield and Deflector Rod Attachment

When used in conjunction with a rear-mounted peanut shaker, the diggers should be equipped with the

Standard Shield and Deflector Rod attachment. The deflector rods direct the flow of vines from the digger blades into a single windrow that can be handled easily by the shaker drum. The shields prevent vines and weeds from "hairpinning" on the standards.

Specifications

Digger No.	Universal Units Required	No. of Rows	Row Spacing (inches)	Net Weight (Approx.)
A-10	Mounting Frame.....	2	24 to 28	145 lb.
C-11	Front Mounting Frame	2	28 to 38	130 lb.



Illust. 2 — Right hand unit of C-11 digger shown with Standard Shield and Rod Deflector attachment.



Peanut Diggers

(For Use with A, B and HM Cultivators)

These peanut diggers are for use with A, B and HM cultivators as listed in Specifications. They mount simply, adjust easily, and operate efficiently. The blades cut the ground just under the peanuts and lift them out so that they can be windrowed, bunched or stacked in accordance with local practice.

The blades are made of carbon steel and can be sharpened either by grinding or by heating and forging. Adjustments on the steel frog permit setting the blade for various cutting angles and the beam has an adjustment for suction. The beam is provided with a friction break.

Standard Shield and Deflector Rod Attachment

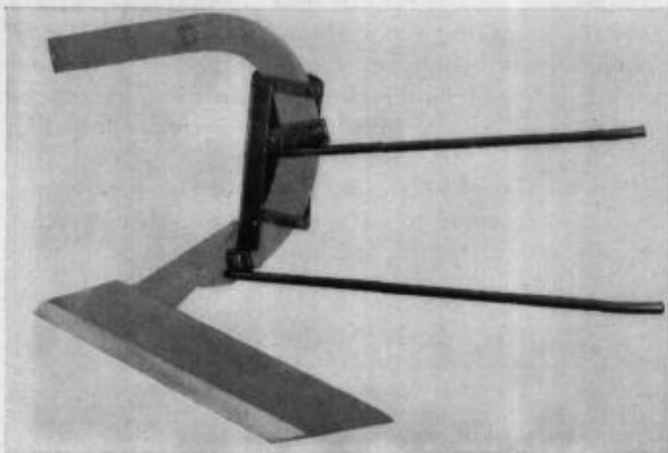
The standard shield and deflector rod attachment, shown below, quickly attaches to the table standards on the A-3, B-4, B-5, HM-6, HM-7, HM-8 and HM-9 two-row peanut diggers.

When fields are rank with purslane and other weeds, these shields and deflector rods cause a uniform flow of cut peanut plants into a windrow . . . preventing the weeds and vines from "hairpinning" or bunching up on the standards and slowing down operations.

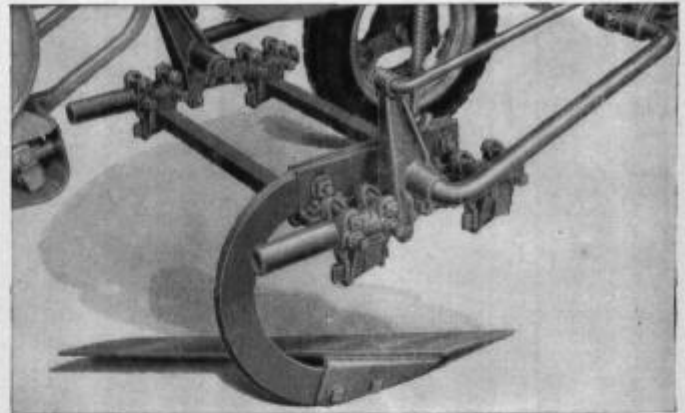
This attachment is required when the A-30, B-31, or HM-32 peanut shaker is used in combination with the peanut digger.

Specifications

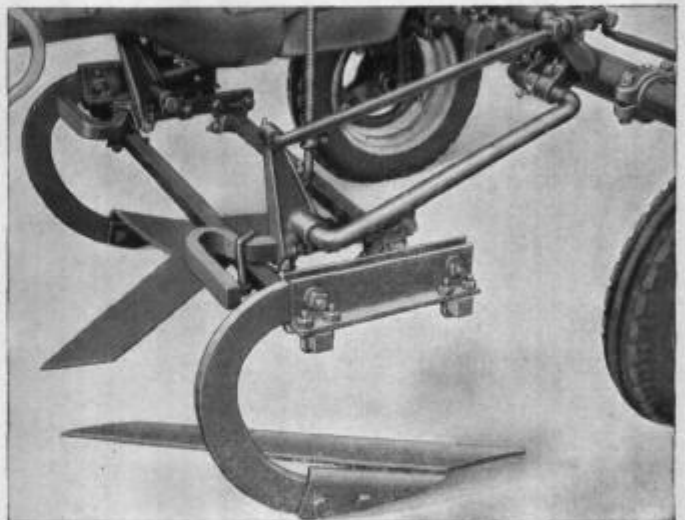
Digger No.	Cultivator Used On	No. of Rows	Row Spacing	Net Weight (Approx.)
A-1	A-136	one	24 to 42-in.	84 lb.
A-2	A-138	one	24 to 42-in.	79 lb.
A-3	A-138	two	24 to 28-in.	142 lb.
B-4	B-236	two	30 to 36-in.	139 lb.
B-5	B-238	two	30 to 36-in.	122 lb.
HM-6	HM-221	two	30 to 36-in.	117 lb.
HM-7	HM-236	two	30 to 36-in.	127 lb.
HM-8	HM-238	two	30 to 36-in.	144 lb.
HM-9	HM-240	two	30 to 36-in.	161 lb.



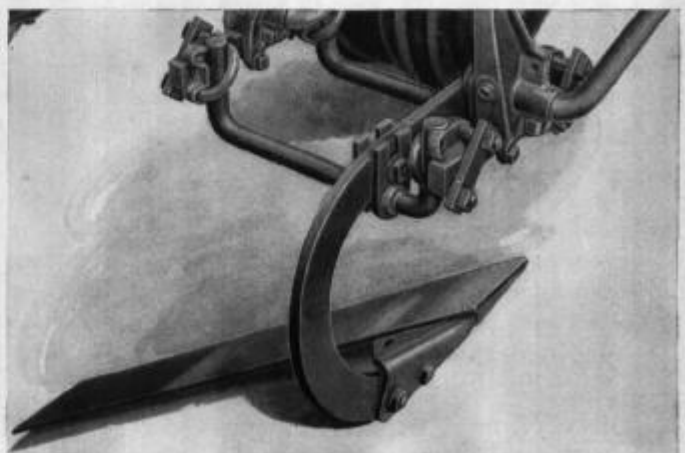
Illust. 1 — Shield and deflector rods attached to the digger standards prevent weeds and peanut vines from bunching up on the standards.



Illust. 2 — The A-1 one-row peanut digger attached to the tool bar of the A-136 cultivator.



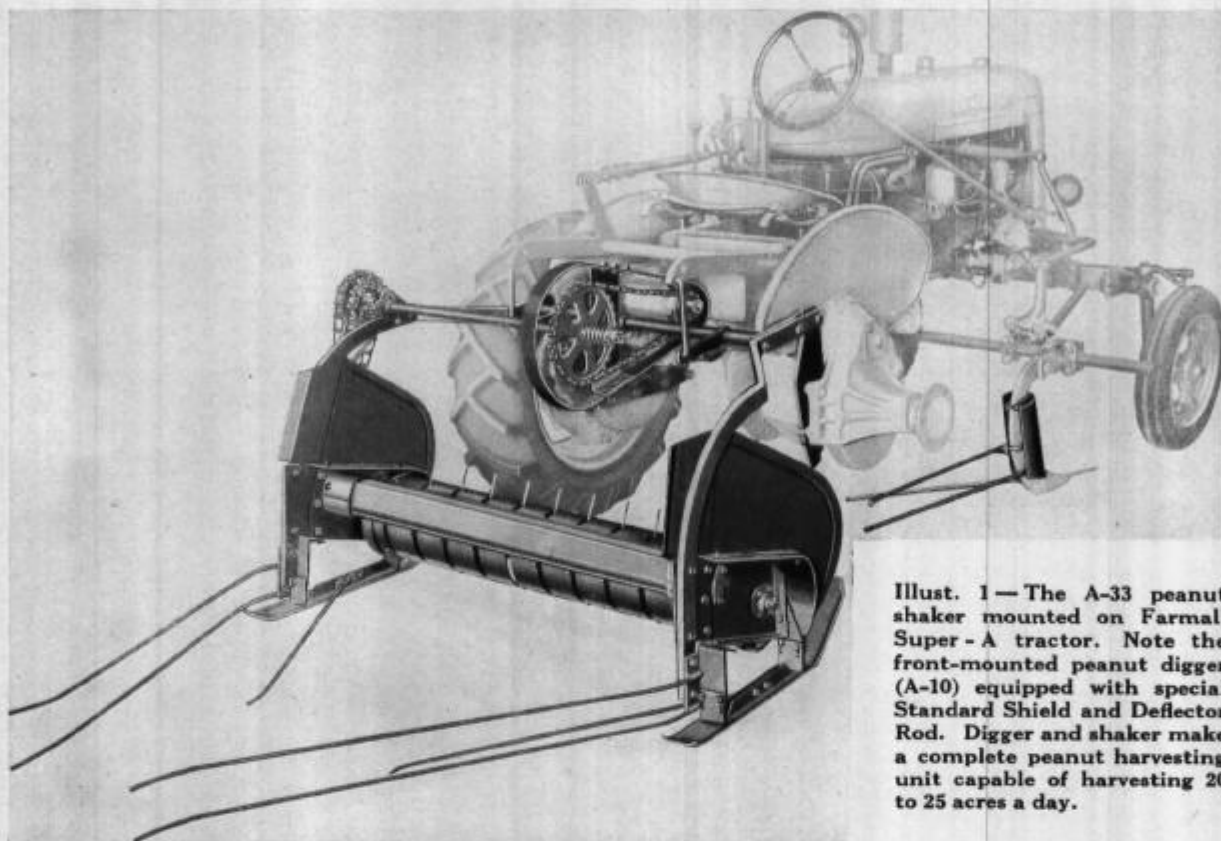
Illust. 3 — The A-3 two-row peanut digger attached to the tool bar of the A-138 cultivator.



Illust. 4 — The right-hand gang of the HM-8 two-row peanut digger attached to the tool bar of the HM-238 cultivator.



Farmalls Super-A and C
A-33 and C-34 Peanut Shakers
 Two-Row, Rear-Mounted



Illust. 1—The A-33 peanut shaker mounted on Farmall Super-A tractor. Note the front-mounted peanut digger (A-10) equipped with special Standard Shield and Deflector Rod. Digger and shaker make a complete peanut harvesting unit capable of harvesting 20 to 25 acres a day.

- Enables one man to dig, clean and windrow two rows of peanuts in one trip down the field.
- Saves time and reduces harvesting costs.
- Vines left in best condition for convenient handling or for uniform curing in windrow.

The A-33 peanut shaker for the Farmall Super-A will handle two rows spaced 24 to 28 inches apart. The C-34 shaker for Farmall C will handle two rows spaced 32 to 36 inches. It is necessary that both tractors be equipped with Belt Pulley and Touch-Control. A Rear Rockshaft unit is required on the Farmall Super-A.

More Efficient Harvesting

These peanut shakers are used in conjunction with A-10 and C-11 diggers to form a complete peanut harvesting outfit. The combination of a peanut digger

and a peanut shaker mounted on the same tractor enables one operator to perform the following operations simultaneously—(1) lift the peanuts out of the ground, (2) shake and remove the dirt from the peanuts, (3) place the dirt-free peanut plants from two rows in a single, loosely formed windrow. Because the vines are not tangled or rolled into ropy form, the peanuts can be stacked easily and quickly or, if preferred, allowed to cure uniformly in the windrow. This "combine" method of peanut harvesting saves time and labor and allows the operator to harvest his crop when weather and crop conditions are just right.

Specifications

No.	Description	Number of Rows	Row Spacing	Width of Shaker Drum	Net Weight (Approx.)
A-33	Peanut shaker for Farmall Super-A	Two	24 to 28 in.	4½ ft.	363 lb.
C-34	Peanut shaker for Farmall C.....	Two	32 to 36 in.	6 ft.	440 lb.



Farmalls Super-A and C

A-33 and C-34 Peanut Shakers

(Continued)



Power Operated and Controlled

These shakers are quick-change mounted on the rear of the tractor and are chain-driven from a sprocket used in place of the belt pulley. The shaker can be raised off the ground and lowered by means of Touch Control, independent of the digger unit. The basic Rear Rockshaft Unit, common to other rear-mounted Farmall implements, is required on the Farmall Super-A. The C-34 shaker is controlled direct from the Touch-Control power arms.

Pickup Drum and Cylinder

The shaker is comprised mainly of a pickup drum with protruding spring fingers, a stripping cylinder and deflector rods. As the fingers rotate they pick up the peanut plants that have been loosened by the digger blades and carry them over the drum. Behind the drum is a faster-speed stripping cylinder which strips the plants off the drum as the pickup fingers withdraw inside the drum. The peanut plants are deposited at the rear where deflector rods guide them into a neat, loose windrow. The entire operation is such that dirt is effectively shaken from the peanut plants without injuring

or knocking off any of the nuts. Moreover, the nuts are placed inside the windrow where they are protected against direct exposure to the sun which otherwise might cause them to shrivel and deteriorate in quality.

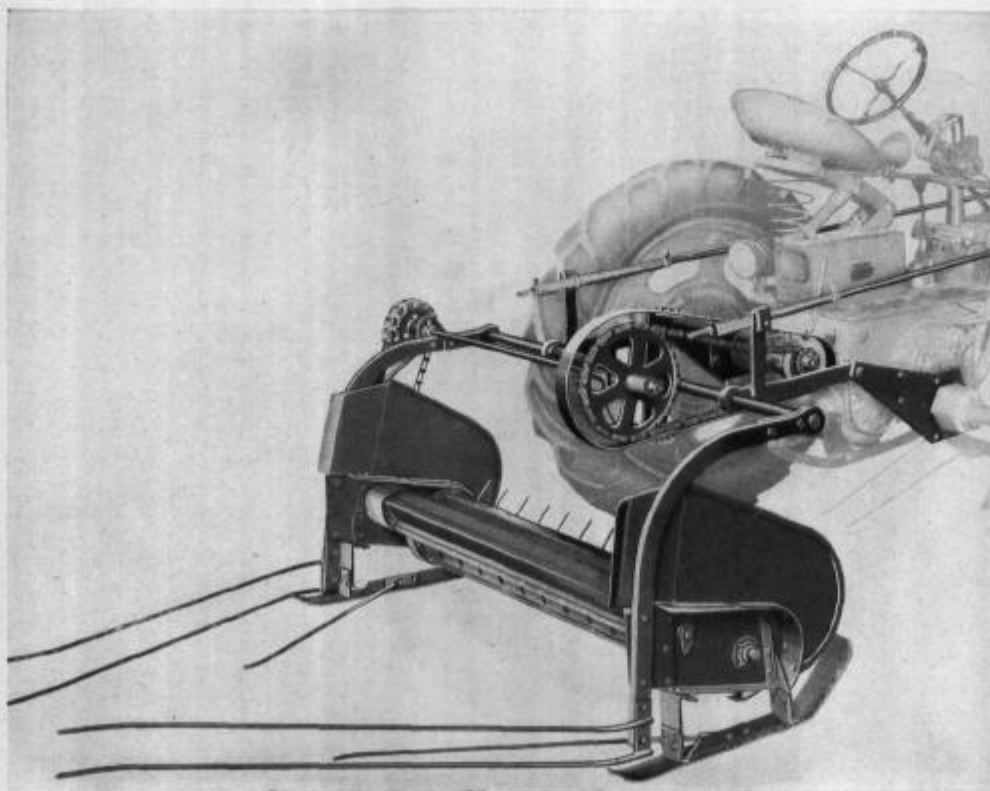
Convenient Height Adjustments

The shakers are provided with runner shoes or slides which follow the contour of the ground and maintain the pickup fingers at the proper working height. Adjustments are provided in the shoe attaching brackets for setting the shaker at the desired height with relation to the peanuts.

To assure an uninterrupted flow of vines to the pickup drum, it is necessary that the forward-mounted digger units be equipped with the special Standard Shield and Deflector Rod.

Chain Drives and Slip Clutch

Heavy-duty implement and roller drive chains are used to transmit power from the tractor belt pulley shaft to the pickup drum and stripping cylinder. A ratchet-type slip clutch guards against breakage.

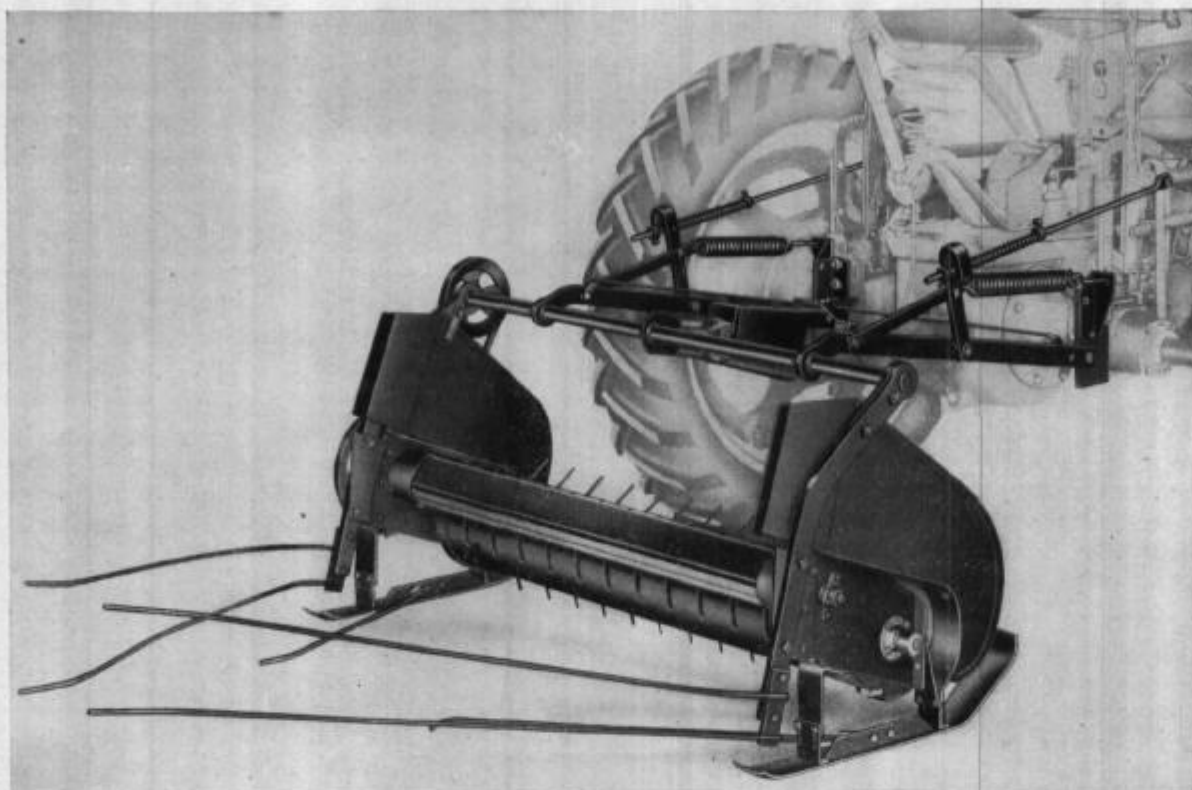


Illust. 1 — The C-34 peanut shaker mounted on Farmall C tractor. This shaker has a 6-foot pickup drum and is suitable for 32 to 36-inch row spacings. In general construction it is very similar to the A-33 shaker for Farmall Super-A.



Farmalls H and M

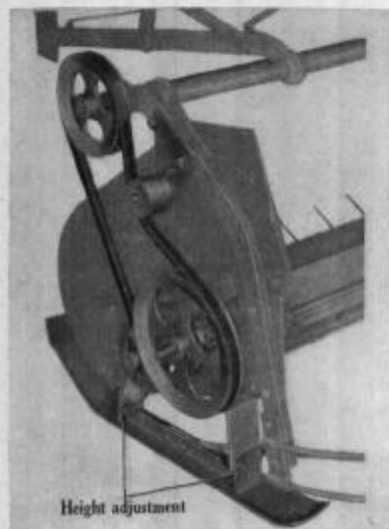
HM-32 Peanut Shaker



Illust. 1 — The HM-32 peanut shaker is operated directly from the power take-off shaft. It will handle two rows spaced 30 to 36 inches apart.

This shaker is designed for use with Farmall cultivators which have been equipped with either the HM-6, HM-7, HM-8, or HM-9 peanut digger. The shaker is connected to the cultivator attaching angles and can be detached readily in a complete unit. The cultivator used must have *or be equipped with* the delayed type of power lift. It is also necessary that the tractor (Farmall H or M) be equipped with hydraulic Lift-All and power take-off.

The HM-32 peanut shaker is the same in design as the A-33 and C-34 shakers, with the exception of the drive mechanism. Power is transmitted from the tractor power take-off shaft to the stripper shaft through enclosed bevel gears and a V-belt drive.



Illust. 2 — The V-belt drive assures smooth, quiet operation. It provides protection against damage when machine encounters obstructions. Note the convenient height adjustments provided on runner shoes.

Special Equipment

Parts to convert power lift cultivator to delayed power lift. Standard Shield and Deflector Rod attachment (required for peanut digger).

Specifications

No.	Description	Number of rows	Row Spacing	Width of Shaker Drum	Net Weight (Approx.)
HM-32	Peanut shaker for Farmalls H and M	Two	30 to 36 in.	6-ft.	431 lb.

Peanut Shakers for Farmall A and B

The following peanut shakers are available for discontinued Farmall Models A and B. These shakers utilize the carrying frame and lifting parts of Farmall cultivators as listed:

Specifications

No.	Description	Net Weight (Approx.)
A-30	Peanut shaker for A-138 cultivator...	436 lb.
B-31	Peanut shaker for B-236 and B-238 cultivators.....	466 lb.



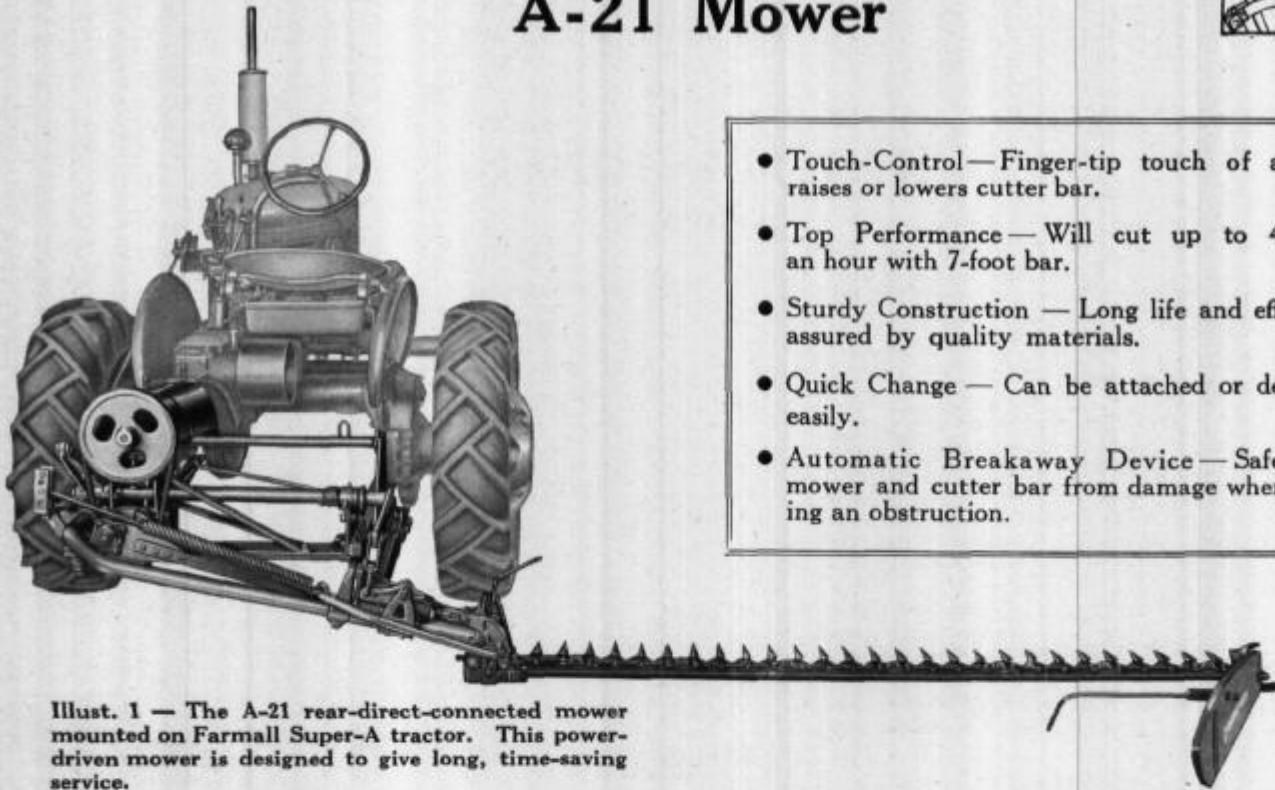
HAY MACHINES

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Farmall Super-A A-21 Mower



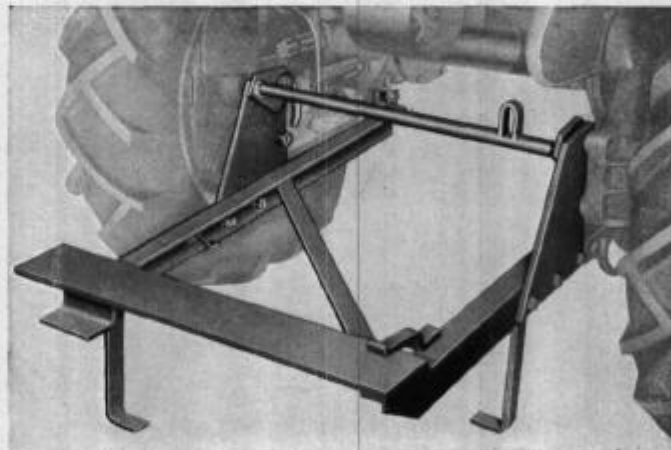
Illust. 1 — The A-21 rear-direct-connected mower mounted on Farmall Super-A tractor. This power-driven mower is designed to give long, time-saving service.

- Touch-Control—Finger-tip touch of a lever raises or lowers cutter bar.
- Top Performance—Will cut up to 4 acres an hour with 7-foot bar.
- Sturdy Construction—Long life and efficiency assured by quality materials.
- Quick Change—Can be attached or detached easily.
- Automatic Breakaway Device—Safeguards mower and cutter bar from damage when striking an obstruction.

The A-21 mower is built for fast, clean cutting with the Farmall Super-A tractor with Touch-Control. A rear-direct-connected machine, this mower can be maneuvered readily in tight places and will turn sharply making it easy to cut square corners. Smooth, silent operation, and long years of use is made possible by precision-built, automotive-type needle and ball bearing construction. An automatic breakaway device is released when obstructions are encountered. This permits the mower, together with the cutter bar, to pivot on the frame and prevents damage to the mower. By backing the tractor, the mower is automatically recoupled.

Easily Attached

The mower is mounted on a frame and is quickly and easily attached to the tractor by one man. No heavy lifting is necessary. A three-point support, consisting of two kick-stands and a metal arm, hold the mower in the correct position so the tractor can be backed into position for speedy attachment.



Illust. 2 — Rear view of A-21 mower frame attached. Note sturdy construction and parts for quick attaching.

Regular Equipment

Five-foot cutter bar consisting of smooth knife and steel guards. Plain bearing automatic pitman, plain pulley.

Special Equipment

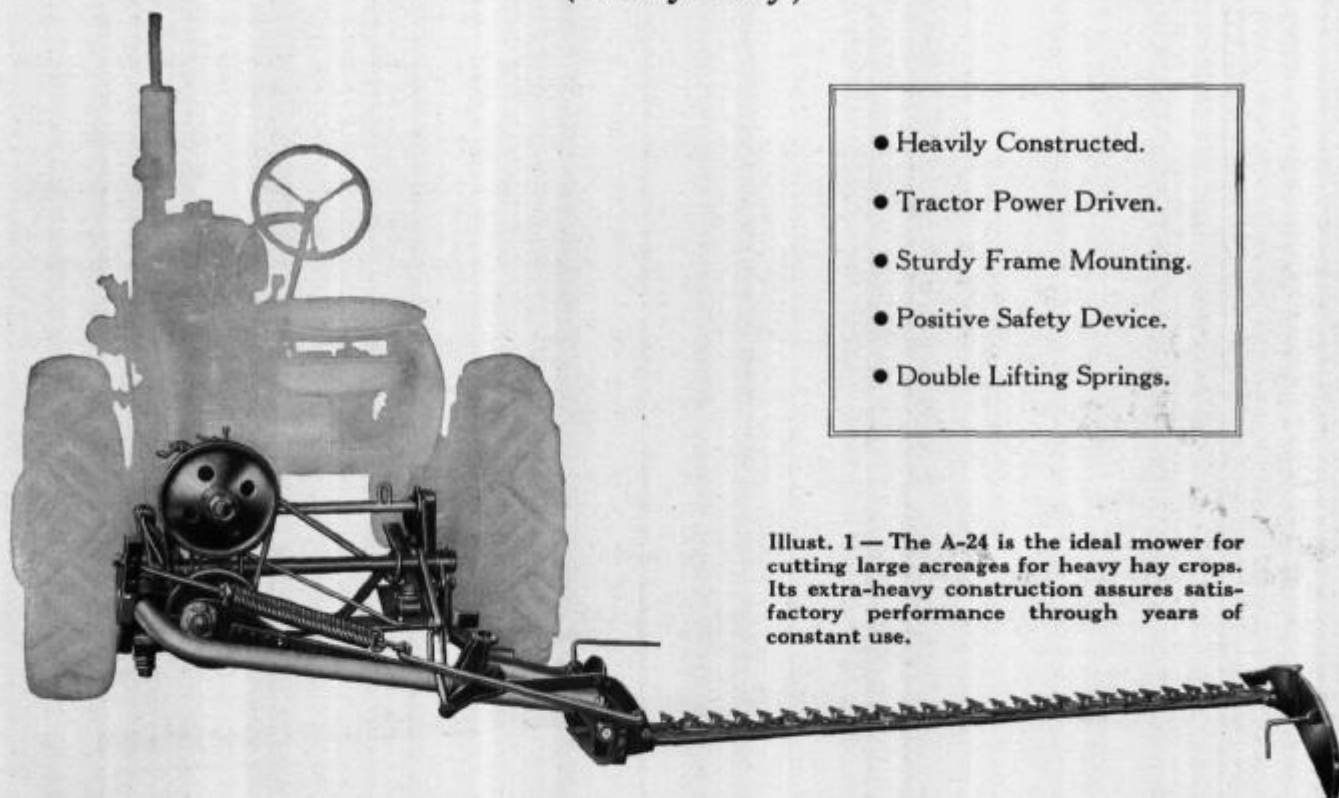
Standard cutter bars (6 and 7-foot). Heavy-duty bars. Bars with $2\frac{1}{2}$ -inch spaced guards. Lespedeza bars. Weed and brush bars ($4\frac{1}{2}$ and 5-foot). Canning pea bar attachments (5 and 6-foot). Windrower attachments (5, 6 and 7-foot). Green crop windrower. Ball-bearing pitman. Fast speed pulley. Slip clutch pulley. Pneumatic-tired lead wheels for outer and inner shoes. High-cut attachment.

Specifications

Speed of flywheel	Regular.....	900 r.p.m.
	Fast (special).....	1,000 r.p.m.
Size of drive pulley	Regular.....	10 $\frac{1}{8}$ in.
	Fast (special).....	12 $\frac{1}{2}$ in.
Size of driven pulley.....		6 $\frac{3}{4}$ in.
V-belt (width).....		$\frac{7}{8}$ in.
Knuckle joints (2).....		Needle bearing
Number of taper roller bearings.....		4
Number of lifting springs.....		1
Lifting arm spring.....		1
Type of breakaway (safety release).....		Telescoping
Cutter bar tilting adjustment.....		Will tilt 5° either above or below horizontal
A-21 for Farmall Super-A, 5-ft. bar.....		540 lb.
A-21 for Farmall Super-A, 6-ft. bar.....		550 lb.
A-21 for Farmall Super-A, 7-ft. bar.....		570 lb.



Farmall Super-A A-24 Mower (Heavy-Duty)



- Heavily Constructed.
- Tractor Power Driven.
- Sturdy Frame Mounting.
- Positive Safety Device.
- Double Lifting Springs.

Illust. 1 — The A-24 is the ideal mower for cutting large acreages for heavy hay crops. Its extra-heavy construction assures satisfactory performance through years of constant use.

Specifications

Speed of flywheel	Regular	900 r.p.m.
	Fast (special)	1,000 r.p.m.
Size of drive pulley	Regular	10 1/4 in.
	Fast (special)	12 1/2 in.
Size of driven pulley		6 3/4 in.
V-belt (width)		7/8 in.
Knuckle joints		2
Number of roller bearings		4
Number of lifting springs		2
Type of breakaway (safety release)		Telescoping
Cutter bar tilting adjustment		Carriage head bolt
A-24 Mower with 5 ft. bar		620 lb.
A-24 Mower with 6 ft. bar		631 lb.
A-24 Mower with 7 ft. bar		644 lb.

The A-24 heavy-duty mower is built for continuous operation in large acreages of heavy hay. It is designed for use with the Farmall Super-A tractor equipped with hydraulic Touch-Control. This mower is a rear direct-connected machine driven by V-belt from the tractor power take-off. Its heavy drive and flywheel shafts are roller-bearing mounted to minimize wear.

An automatic safety release guards the A-24 against damage by allowing it to pivot rearward on the mower frame when obstructions are encountered. The A-24 also features quick attachability, made possible by two kick-stands and a metal arm. These firmly hold the mower upright so the tractor may be backed up to it and attached.

Regular Equipment

Five-foot cutter bar with smooth knife and steel guards. Plain-bearing automatic pitman. Regular speed pulley.

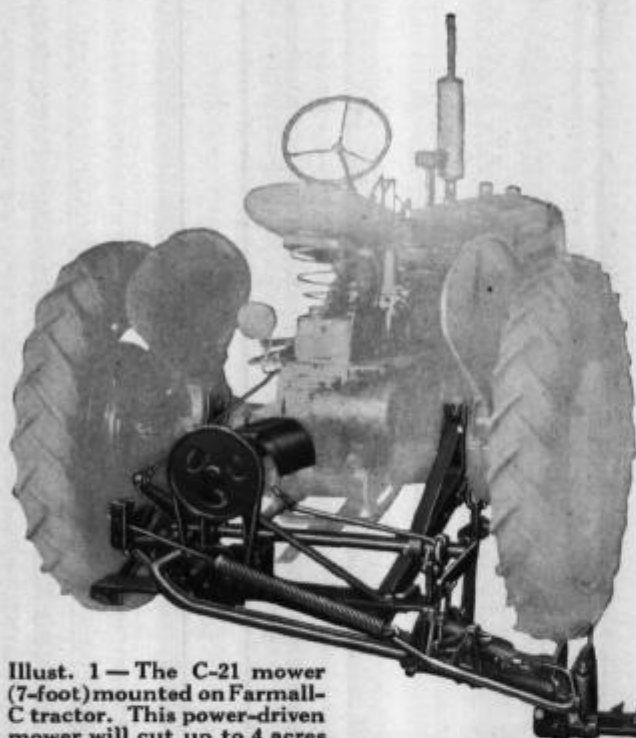
Special Equipment

Standard cutter bars (6 and 7-foot). Low-cut bars (5, 6 and 7-foot). Brush bars (5, 6 and 7-foot). Weed bars (5, 6 and 7-foot). Five-foot weed bar with heavy duty guards and smooth ledger plate. Canning pea bar attachments (5 and 6-foot). Lespedeza bars (5, 6 and 7-foot). Windrower attachments (5, 6 and 7-foot). Green crop windrower. Ball-bearing pitman. Safety slip clutch. Special fast-speed pulley (1,000 r.p.m.). Pneumatic-tired lead wheels for inner and outer shoes.

Illust. 2 — The A-24 has all of the latest time and labor-saving features plus heavy construction. Heavy draw-bar, flywheel and flywheel shaft give the mower great durability and long life. Large hinge pins and bearings enable the A-24 to withstand sustained usage. It is truly a heavy-duty mower.



Farmall C C-21 Mower



Illust. 1—The C-21 mower (7-foot) mounted on Farmall-C tractor. This power-driven mower will cut up to 4 acres an hour.

The C-21 is a rear-mounted mower built for use with the Farmall C tractor equipped with Touch-Control. It is designed especially for clean cutting at fast travel speeds. Finger-tip touch of a small lever, hydraulically raises or lowers the cutter bar. This feature facilitates travel over ridges and ditches. Smooth, silent operation and long life is assured by liberal use of precision-built needle and ball bearings throughout the mower. An automatic breakaway device releases when obstructions are encountered, allowing the mower to pivot, preventing damage. The cutter bar is automatically reset by reversing the tractor.

Quick Attachability

Quick attachability is an outstanding feature of this mower — it can be attached or detached by two hexagon



Illust. 2—Rear view of C-21, showing drawbar mounting, V-belt drive, pitman, and automatic breakaway device.

- A High-Speed Mower — does an efficient, clean cutting job at top tractor speeds.
- "V" Belt, Drive — eliminates need of gears.
- Cutter bar raised and lowered by Touch-Control.
- Automatic Safety Release — protects mower against breakage when encountering obstructions.
- Quick Change — made possible by two kickstands and metal arm forming three-point support — back tractor to frame and attach mower — a one-man operation.

axle brackets quickly and easily. This is made possible by a frame with three-point support consisting of two kickstands and a metal arm that rests on the pitman housing. Held in a standing position by these supports, it is simple to back the tractor into position and attach the mower.



Regular Equipment

Five-foot cutter bar with smooth knife and steel guards. Automatic pitman (plain bearing) and plain pulley.

Special Equipment

Standard cutter bars (6 and 7-foot). Heavy-duty bars. Bars with $2\frac{1}{2}$ -inch spaced guards. Lespedeza bars. Weed and brush bars ($4\frac{1}{2}$ and 5-foot). Canning pea bar attachments (5 and 6-foot). Windrower attachments (5, 6 and 7-foot). Green crop windrower. Ball-bearing pitman. Fast speed pulley. Slip clutch pulley. Pneumatic-tired lead wheels for outer and inner shoes. High-cut attachment.

Specifications

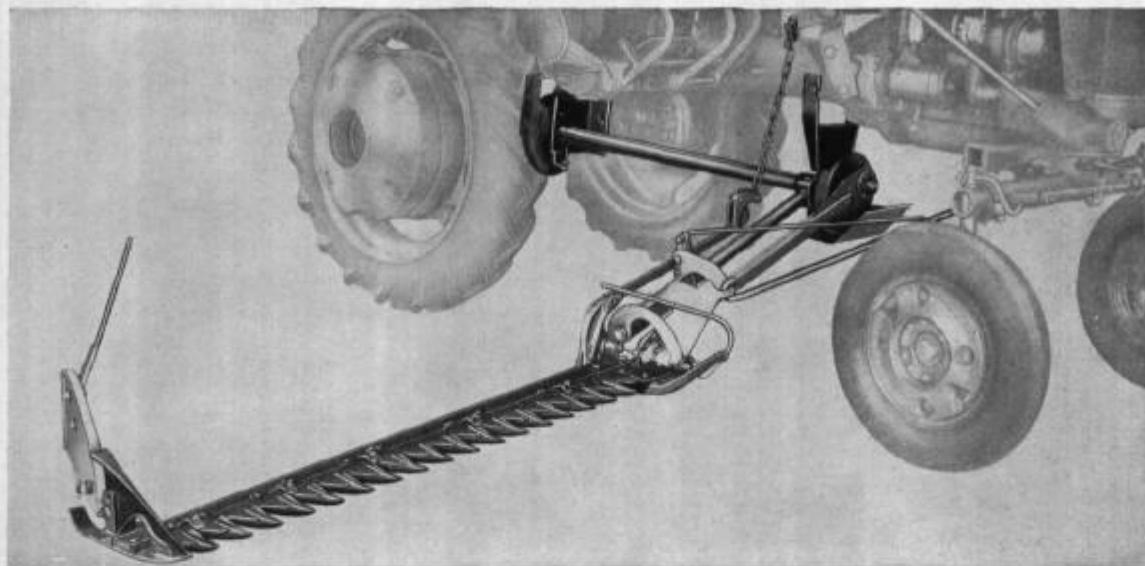
Speed of flywheel	Regular.....	900 r.p.m.
	Fast (special).....	1,000 r.p.m.
Size of drive pulley	Regular.....	$10\frac{1}{2}$ in.
	Fast (special).....	$12\frac{1}{2}$ in.
Size of driven pulley.....		$6\frac{3}{4}$ in.
V-belt (width).....		$\frac{7}{8}$ in.
Knuckle joints (2).....		Needle bearing
Number of taper roller bearings.....		4
Number of lifting springs.....		1
Lifting arm spring.....		1
Type of breakaway (safety release).....		Telescoping
Cutter bar tilting adjustment.....		Will tilt 5° either above or below horizontal
C-21 for Farmall-C, 5-ft. bar.....		540 lb.
C-21 for Farmall-C, 6-ft. bar.....		550 lb.
C-21 for Farmall-C, 7-ft. bar.....		570 lb.



Farmall Cub

Cub-22 Mower

Side-Mounting



Illust. 1 — Cub-22 side-mounted mower cuts a clean, 4½-foot swath at a fast rate of speed. It is the ideal mower for getting into those tight corners.

- Sturdy construction, insuring efficient operation and long life.
- Quick change.
- Touch-Control lifts or lowers cutter bar at a fingertip-touch on the control lever. Manual control available.
- V-belt drive from power take-off absorbs shock loads.
- Easy to operate, with clear vision for the tractor operator.

Regular Equipment

Cutter bar with MD 989, 3-in. spaced guards. Attaching parts for mounting cutter bar in front of right-rear tractor wheel. V-belt drive from tractor power take-off.

Specifications

Weight (approx.) 4½ ft. cutter bar with hand lift	229 lb.
Speed of flywheel	800 r.p.m.
Size of drive pulley	4½ inch
Size of driven pulley	8½ inch
V-belt width	2½ inch
Required for manual control	<div> <div></div> <div>Raising Lever and Rear Rockshaft No. 511 893 R92</div> </div>
Required for Touch-Control	None

A Simple, Easy-to-Operate Mower

The Cub-22 side-mounted, 4½-foot mower is a simple, low-cost machine especially designed for mounting on the Cub tractor. This mower is especially adapted to cutting small fields of hay, and for cleaning up mis-

cellaneous patches of weeds. It cuts a clean, 4½-foot swath. The operator has an unobstructed view of the cutter bar and the field ahead. This feature makes it easy for him to steer the tractor accurately, reaching into small corners and avoiding obstructions. The cutter bar is easily raised and lowered by the manual control lever or by hydraulic Touch-Control. These quick, positive control features enable the operator to instantly raise the cutter bar over any ordinary obstacle.

Smooth Operation

Smooth, quiet operation is assured because power is transmitted from the tractor power take-off to the mower through a V-belt drive. This type drive also absorbs shock loads.

Simplicity of Construction

Construction of the mower is extremely simple. It consists of a drive shaft driven by the V-belt, a flywheel, pitman, and cutter bar.

Quick-Change Mounting

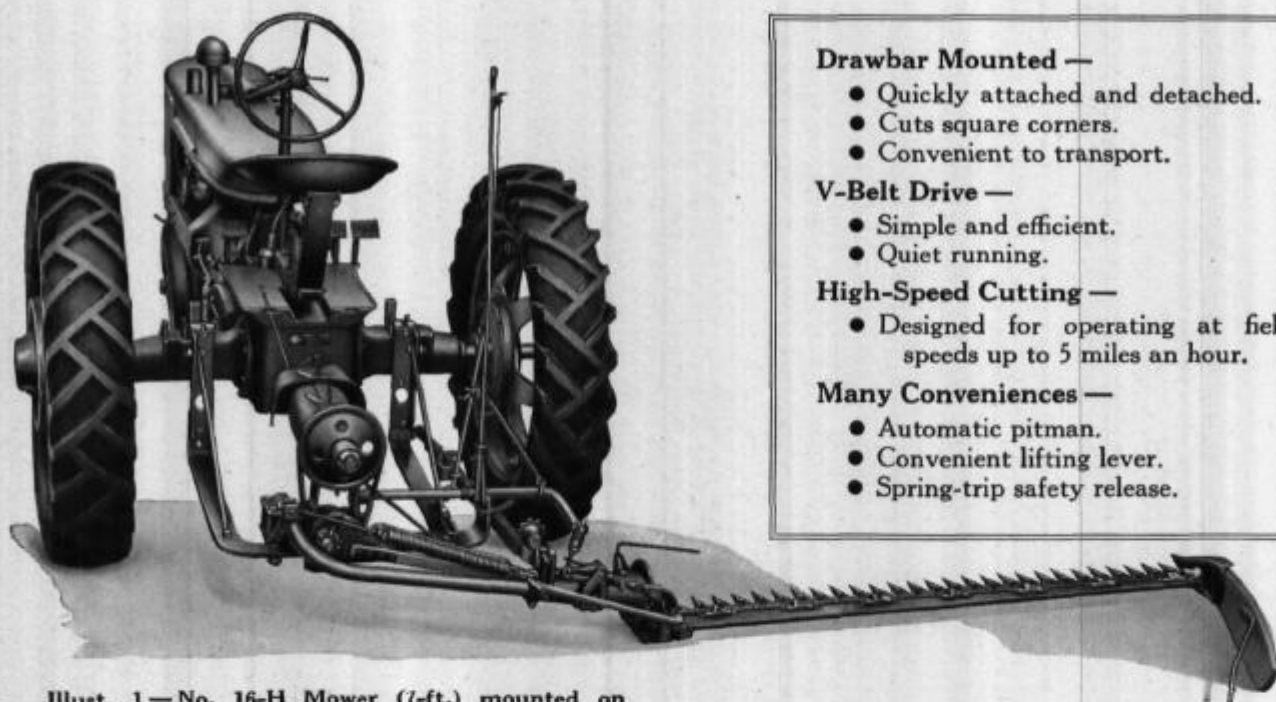
The Cub-22 mower is quickly and easily attached to or removed from the Cub tractor. Three quick-change brackets, with slotted holes, attach the mower to the tractor mounting pads. A sturdy pull-rod, which connects to the inner shoe and slips into the socket on the tractor provided for the Universal Mounting Frame, rigidly holds the cutter bar at right angles to the tractor. However, the cutter bar is free to float in the vertical plane. It is, thus, free to follow the contour of the ground, permitting a clean swath at a high rate of speed.

Cutter Bar

The Cub-22 mower 4½-foot cutter bar is the same as furnished for other mowers. Refer to page 269.



No. 16 Series Farmall Mowers



Illust. 1—No. 16-H Mower (7-ft.) mounted on Farmall-H tractor. This outfit is capable of cutting 40 acres a day.

The Farmall line of mowers includes the Nos. 16-A, 16-B, 16-BN, 16-H, and 16-M. All are similar in design but each is fitted for mounting on the particular Farmall for which it is built. Among the outstanding advantages of these mowers are—ability to cut clean at fast travel speeds; smooth, quiet operation, and exceptional maneuverability.

Drawbar Mounted

The "16" series mowers are mounted directly on the tractor drawbar and can be readily attached and detached. This type of mounting makes a compact, easily handled outfit. It permits cutting square corners and the outfit can be backed and maneuvered without difficulty. It also makes a more convenient outfit to transport.

High-Speed Cutting

Farmall mowers are designed for successful operation at speeds around five miles an hour. This means a potential cutting capacity up to 40 acres a day. The sickle operates at the right speed to assure clean cutting without tearing or pulling up the grass.

V-Belt Drive

Power is transmitted from the drive shaft direct to the pitman by a sturdy V-belt. This simple, highly efficient drive is exceptionally quiet and smooth-running at all speeds. The V-belt also cushions the shocks of sudden starting and stopping.

Drawbar Mounted —

- Quickly attached and detached.
- Cuts square corners.
- Convenient to transport.

V-Belt Drive —

- Simple and efficient.
- Quiet running.

High-Speed Cutting —

- Designed for operating at field speeds up to 5 miles an hour.

Many Conveniences —

- Automatic pitman.
- Convenient lifting lever.
- Spring-trip safety release.

Regular Equipment

Five-foot cutter bar for Nos. 16-A, B, and BN. Seven-foot cutter bar for Nos. 16-H and M. Two knives. Automatic pitman (plain bearing).

Special Equipment

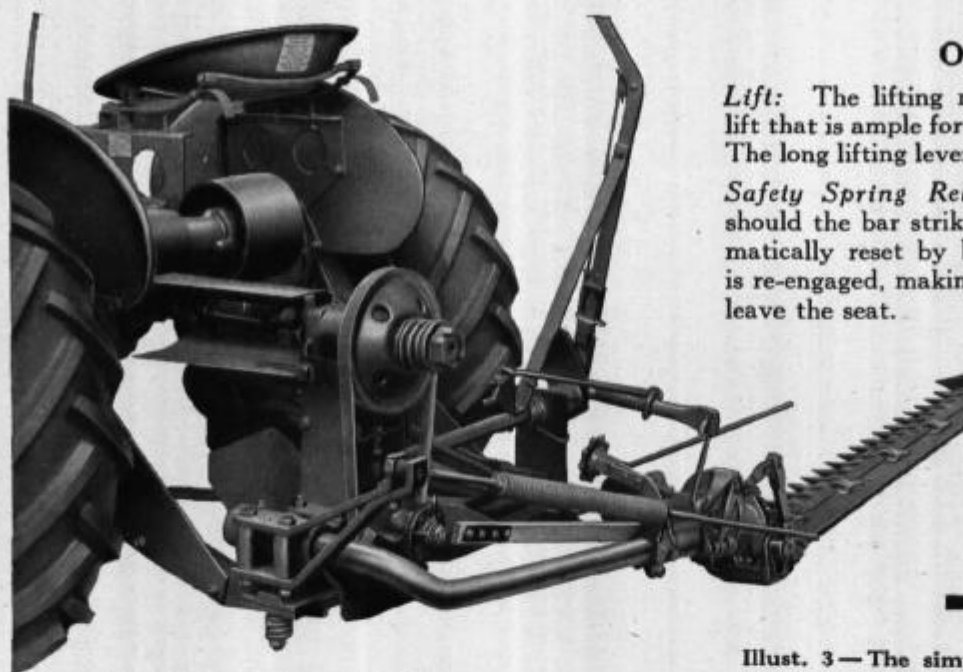
Standard cutter bars (6 and 7-foot) for Nos. 16-A, B, and BN; (5 and 6-foot) for Nos. 16-H and M. Heavy-duty bars. Bars with 2½-inch spaced guards. Lespedeza bars. Weed and brush bars (4½ and 5-foot). Canning pea bar attachments (5 and 6-foot). Windrower attachments (5, 6 and 7-foot). Green crop windrower. Ball-bearing pitman. Fast speed pulley. Slip clutch pulley. Pneumatic-tired lead wheels for outer and inner shoes. High-cut attachment.

Specifications

Speed of flywheel.	{ Regular.....	900 r.p.m.
	{ Fast (special).....	1,000 r.p.m.
Size of drive pulley	{ Regular.....	10 7/8 in.
	{ Fast (special).....	12 1/2 in.
Size of driven pulley.....		6 3/4 in.
V-belt (width).....		3/4 in.
Knuckle joints (2)—Type.....		Needle Bearing
Number of roller bearings.....		4
Number of spring-loaded rawhide seals.....		3
Number of lifting springs.....		2
Number of lifting spring angle adjustments.....		3
Type of breakaway (safety release).....		Telescoping
Cutter bar tilting adjustment.....		Hand wheel
No. 16-A for Farmall-A, 5 ft. bar.....		505 lb.
No. 16-B for Farmall-B, 5 ft. bar.....		515 lb.
No. 16-BN for Farmall-BN, 5 ft. bar.....		515 lb.
No. 16-H for Farmall-H, 7 ft. bar.....		542 lb.
No. 16-M for Farmall-M, 7 ft. bar.....		542 lb.



No. 16 Series Farmall Mowers



Illust. 1 — Side view of No. 16-H mower, showing the V-belt drive and drawbar mounting.



Illust. 2 — Spring-release telescoping guide bar shown in fully extended position. This bar serves as a guide for automatic recoupling after the cutter bar is tripped. To reset the bar, the tractor is backed until the release latch is again coupled.

Other Features

Lift: The lifting mechanism (plain type) provides a lift that is ample for passing over all ordinary obstacles. The long lifting lever is conveniently located.

Safety Spring Release: Guards against breakage should the bar strike an obstruction. The bar is automatically reset by backing the tractor until the latch is re-engaged, making it unnecessary for the operator to leave the seat.

Illust. 3 — The simple power transmission is comprised of a V-belt pulley connected to the flexible drive shaft, the V-belt, and a V-belt pulley integral with the pitman flywheel. Quiet operation, shock absorbing characteristics, and fewer wearing parts are outstanding advantages.



Illust. 4 — Pneumatic-tired inner shoe lead wheel.



Illust. 5 — Pneumatic-tired outer shoe lead wheel.

Special Attachments

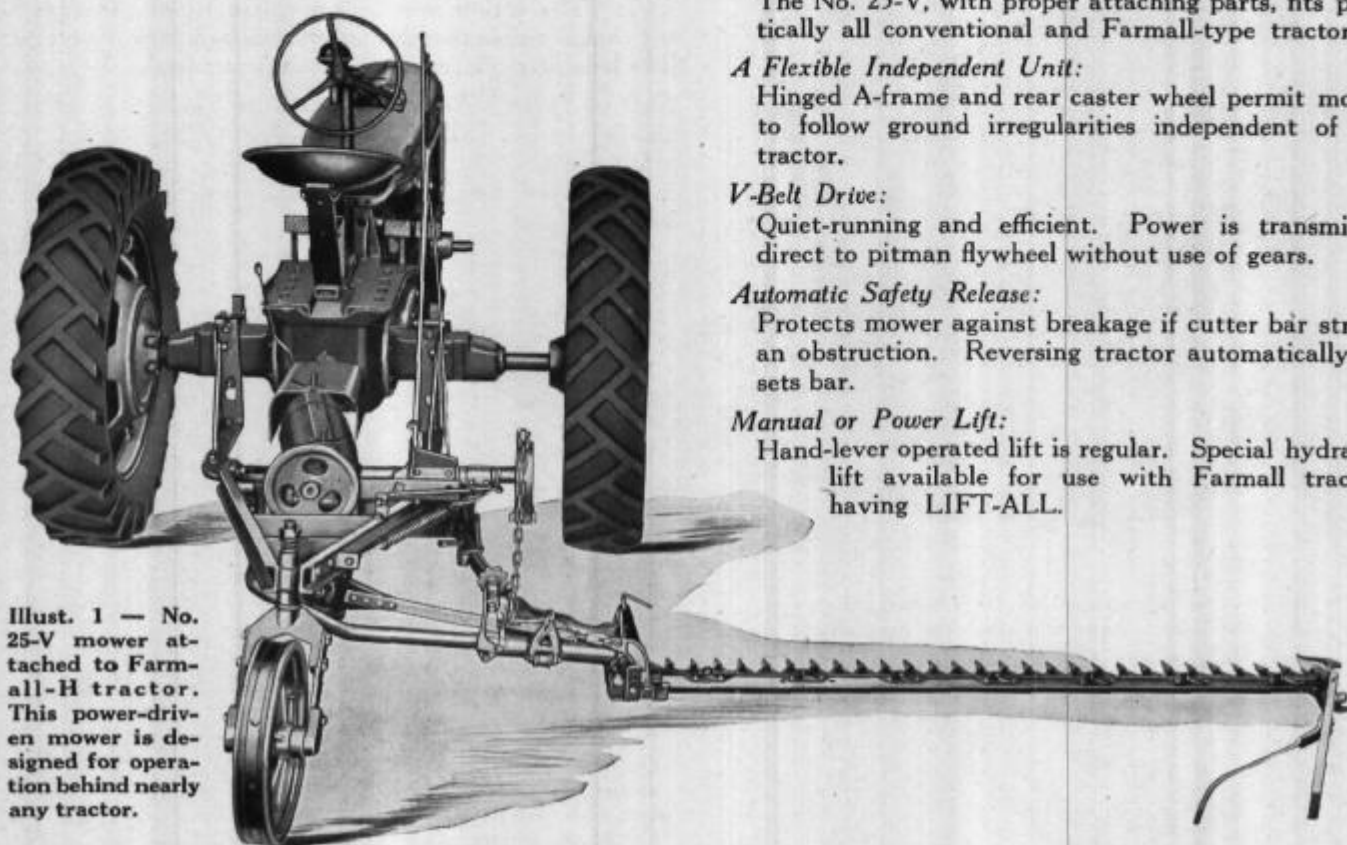


Illust. 6 — Slip clutch drive pulley.



No. 25-V Tractor Mower

(Universal Type)



Illust. 1 — No. 25-V mower attached to Farmall-H tractor. This power-driven mower is designed for operation behind nearly any tractor.

The No. 25-V is a universal type, trail-behind, power mower with attaching parts available to fit most of the popular makes and models of farm tractors. It can be attached or detached conveniently by one man. The mower A-frame is hinged to the tractor drawbar, allowing it to move freely up and down but holding the mower rigid sidewise. This flexibility allows the mower to follow any ground irregularities independent of the tractor. The weight of the mower is carried largely on a rear caster wheel equipped with roller bearing, dust-sealed and pressure-gun lubricated.

Regular Equipment

Cutter bar (7 ft.) with two knives. Automatic pitman (plain bearing). Hand-lever operated lift (plain-type). Steel caster wheel. Power drive and hitch parts for tractors, as specified.

Special Equipment

Standard cutter bars (5 and 6-ft.). Heavy-duty bars (5, 6, and 7-ft.). Weed and brush bars (4½ and 5-ft.). Lespedeza bars (5, 6, and 7-ft.). Bars with 2½-in. guard spacing. Canning pea bar attachments (5 and 6-ft.). Windrower attachments (5, 6 and 7-ft.). Green crop windrower attachments (all lengths). Hydraulic

Fits All Popular Tractors:

The No. 25-V, with proper attaching parts, fits practically all conventional and Farmall-type tractors.

A Flexible Independent Unit:

Hinged A-frame and rear caster wheel permit mower to follow ground irregularities independent of the tractor.

V-Belt Drive:

Quiet-running and efficient. Power is transmitted direct to pitman flywheel without use of gears.

Automatic Safety Release:

Protects mower against breakage if cutter bar strikes an obstruction. Reversing tractor automatically resets bar.

Manual or Power Lift:

Hand-lever operated lift is regular. Special hydraulic lift available for use with Farmall tractors having LIFT-ALL.

lift for use with Farmalls H, M and MD equipped with LIFT-ALL. Ball-bearing pitman. Pneumatic-tired caster wheel. Pneumatic-tired lead wheels. Fast speed pulley. Slip clutch pulley. Foot lever attachments. Trailing hitch angle.

Power Drive and Hitch Parts

(For tractors with standardized power take-off)

ZMA-690 for Farmalls H and M.....	72 lb.
ZMA-691 for Farmalls H and M (hydraulic lift).....	75 lb.
ZMA-696 for Farmalls A, B, and BN.....	55 lb.
ZMA-722 for Farmall AV.....	55 lb.
ZMA-713 for W-4, W-6, and WD-6.....	75 lb.
ZMA-721 for W-9 and WD-9.....	70 lb.
ZMA-692 for O-4 and O-6.....	72 lb.

Note: In addition to the tractors listed above, hitch parts are available for many older IH models and other makes of tractors.

(For tractors with non-standardized power take-off)

Note: Special conversion packages can be obtained for converting tractors with non-standardized power take-off to A.S.A.E. standards. Any of the above listed power-drive hitches can then be used with such converted tractors.

Specifications

Number	Description	Size	Net Weight* (Approx.)
25-V	Universal tractor mower	7 ft.	568 lb.

*Weight does not include Power Drive and Hitch Parts.



INTERNATIONAL HARVESTER

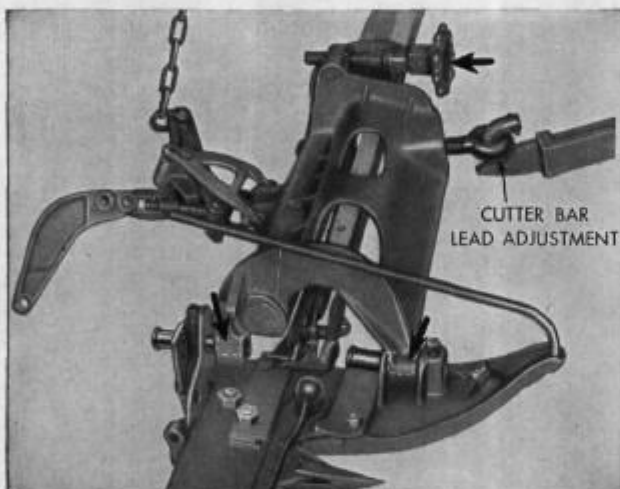


No. 25-V Tractor Mower

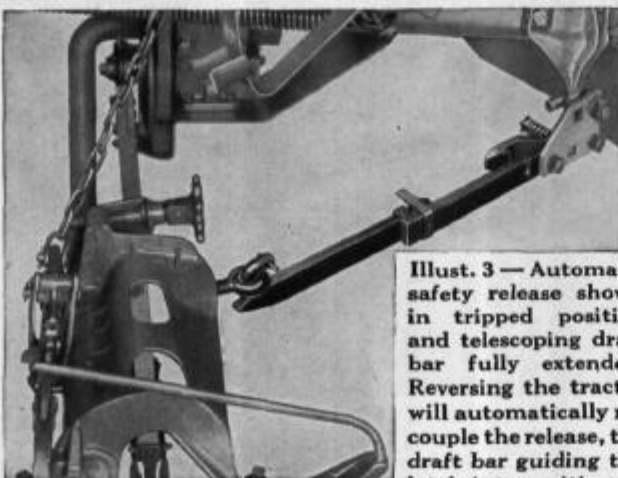
(Universal Type)



Illust. 1 — V-belt drive of the No. 25-V mower, showing the telescoping power take-off shaft. Provision is made for adjusting the belt tension.



Illust. 2 — Cutter bar and yoke assembly shown with pitman and gag post disconnected. Note the replaceable hinge pins, in position for inserting; the threaded eyebolt for adjusting the lead, and the hand wheel for regulating the tilt.



Illust. 3 — Automatic safety release shown in tripped position and telescoping draft bar fully extended. Reversing the tractor will automatically recouple the release, the draft bar guiding the latch into position.

V-Belt Drive

Power is transmitted quietly, smoothly, and with maximum efficiency from the drive shaft directly to the flywheel by means of a V-belt. Both the drive shaft and flywheel shaft turn on tapered roller bearings that are oil-bath lubricated. The universal joints on the telescoping power take-off shaft are of the automotive needle-bearing type. A higher knife speed for heavy cutting can be conveniently obtained merely by using a larger diameter drive pulley and longer belt — (available as special equipment).

Automatic Safety Release

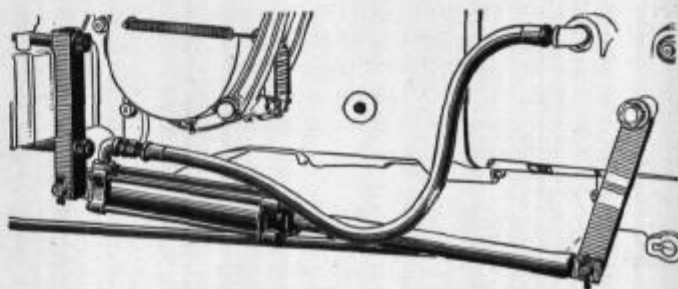
The No. 25-V mower is equipped with a safety spring trip which automatically releases the cutter bar should it strike an obstruction. The pitman and knife retain their normal straight line position even when the bar is fully swung back. This avoids cramping and possible pitman breakage. The two-piece telescoping draft bar makes it possible to reset the cutter bar automatically by merely backing the tractor until the release latch is re-engaged. It is unnecessary for the operator to get off the tractor seat.

Replaceable Hinge Pins and Bushings

Ample provision has been made to maintain proper alignment of the cutter bar. The lead of the bar can be adjusted by turning the threaded eyebolt to which the draft bar is attached. The hinge pins and bushings can be replaced when worn, thus restoring the bar to its original alignment at low cost. The tilt of the bar is adjusted by means of a hand wheel.

Manual or Power Lift

The mower is regularly equipped with a convenient hand lever for raising and lowering the cutter bar. A power lift attachment, consisting of a hydraulic cylinder and hose (POSP-6760 package) together with the necessary linkage and lifting parts, is available as special equipment for use with Farmall-H or M tractors. It is necessary that the tractors be equipped with the Lift-All attachment which is not included in the above.

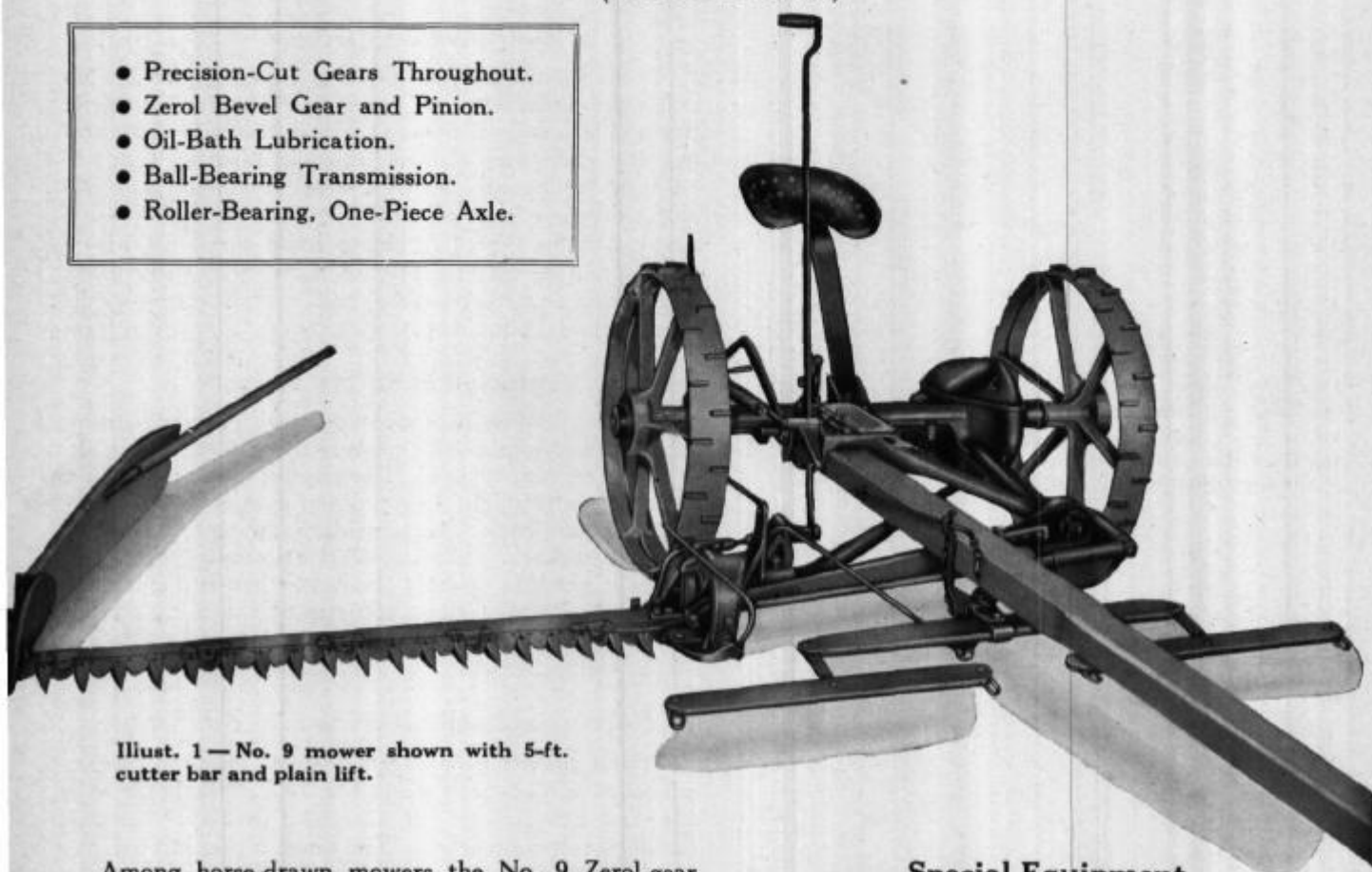


Illust. 4 — A special hydraulic lift attachment can be supplied for use with Farmall tractors equipped with Lift-All. This shows the hydraulic cylinder, piston, and rod which actuate a lifting arm on the mower.

No. 9 Zerol-Gear Mower

(Horse-Drawn)

- Precision-Cut Gears Throughout.
- Zerol Bevel Gear and Pinion.
- Oil-Bath Lubrication.
- Ball-Bearing Transmission.
- Roller-Bearing, One-Piece Axle.



Illust. 1 — No. 9 mower shown with 5-ft. cutter bar and plain lift.

Among horse-drawn mowers the No. 9 Zerol-gear mower is a recognized leader because of its light draft, clean cutting and smooth, quiet operation. It contains such outstanding features as: fully-enclosed transmission with Zerol bevel gear and pinion; automatic (oil bath) lubrication; "two-step" gear reduction; balanced weight over axle; ball-bearing transmission; roller-bearing, one-piece axle; and hitch bracket adjustable to match the team.

Plain or Vertical Lift

The No. 9 is available either with plain lift or vertical lift. The plain lift affords a high, easy lift with ample clearance for all ordinary cutting conditions. The vertical lift mechanism permits raising the cutter bar to a full vertical position without stopping the mower. This makes it useful for cutting close to trees, stumps, or other obstructions which cannot be passed over. The clutch automatically disengages when the bar is raised beyond a certain point.

Regular Equipment

Tongue, neckyoke, and steel eveners. Two knives. Cast main wheels with $4\frac{1}{4}$ -in. rims. Cutter bars with 3-in. spaced, malleable guards. Plain or vertical lift, as ordered, and in sizes (cutting widths) as shown in table of Specifications.

Special Equipment

Reaping attachments (for $4\frac{1}{2}$ and 5-ft. mowers). Buncher attachments (for $4\frac{1}{2}$, 5, and 6-ft. mowers). Weed (high-cut) attachment. Pea and bean vine lifters (set of 6 including outer shoe runner). Heavy-duty bars ($4\frac{1}{2}$, 5, 6, and 7-ft.). Weed and brush bars ($4\frac{1}{2}$ and 5-ft.). Lespedeza bars ($4\frac{1}{2}$, 5, 6, and 7-ft.). Mowers with guards spaced $2\frac{1}{2}$ inches apart ($4\frac{1}{2}$, 5, 6, and 7-ft.). Pea bar attachment (for cutting green canning peas, etc.). Pneumatic-tired wheels with 4-ply, 5.00 x 21-in. tires. Cast wheels having rims $5\frac{1}{4}$ in. wide. Two-wheel tongue truck (cast or pneumatic-tired wheels). Stub pole tractor hitch (for hitching mower direct to tractor). Ball-bearing pitman. Knives with under-serrated sections. Steel guards. Special high-speed gears. Thills for one horse.

Specifications

Length of Cutter Bar	Type of Lift	Net Weight (Approx.)
$4\frac{1}{2}$ -ft.	Plain	769 lb.
5-ft.	Plain	775 lb.
6-ft.	Plain	788 lb.
7-ft.	Plain	799 lb.
$4\frac{1}{2}$ -ft.	Vertical	775 lb.
5-ft.	Vertical	781 lb.

Weights shown are for mowers equipped with regular 3-in. spaced guards and $4\frac{1}{4}$ -in. rim cast wheels. For pneumatic-tired mower deduct 53 lb. from above weights. For mowers with $5\frac{1}{4}$ -in. rims (cross lugs) add 30 lb. For mowers with $5\frac{1}{4}$ inch (center rim) add 41 lb.



No. 9 Zerol-Gear Mower

(Horse-Drawn)

Most Efficient Power Transmission

The No. 9 delivers a higher percentage of power from drive wheel to flywheel than any other ground-drive mower. This is due to the efficiency of its overall design and to the precision-cut gearing running on ball bearings and constantly lubricated by a bath of oil.

The transmission is arranged to give a "two-step" gear reduction. All gears are machined to precision accuracy and are hardened. The bevel gear and bevel pinion are Zerol-type. This is a distinctive type of curved-tooth gear which combines advantages of both the straight and spiral types of bevel gear. Tooth contact is always uniform and takes place near the centers where the teeth are strongest—never on the ends or edges. This prevents wear from developing along the tooth edges and assures an unusually smooth, quiet-running and long-life transmission.

Gears Fully Enclosed Run in Oil

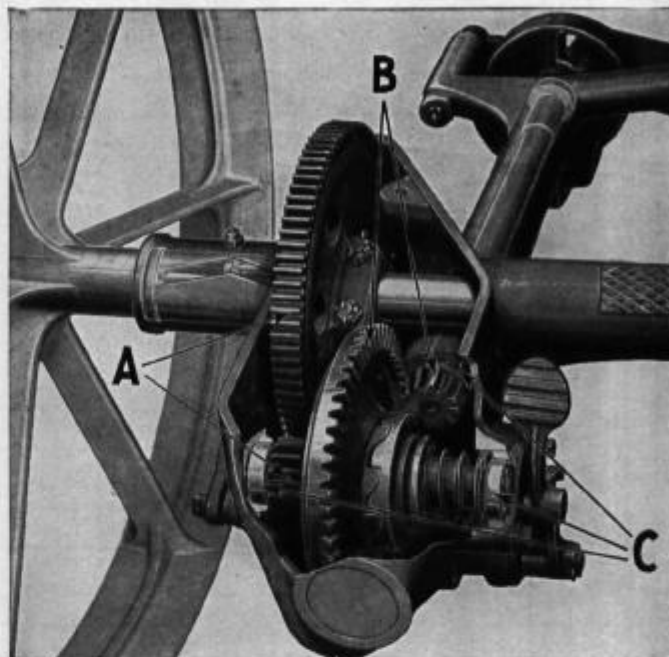
The entire transmission is fully enclosed in a dust-tight, leak-proof gear case. A deep bath of oil envelops the moving parts and assures thorough lubrication of the assembly. It circulates also to the flywheel shaft bearings and to the main axle bearings. Spring-loaded leather oil seals prevent oil leakage and exclude the dirt.

Ball and Roller Bearings

The axle revolves on double roller bearings equipped with replaceable steel sleeves. Anti-friction ball bearings are used on the countershaft and on the flywheel shaft (rear). The front end of the flywheel shaft has an extra-long, babbitt-lined bearing which dampens vibration and prevents the flywheel from "whipping."



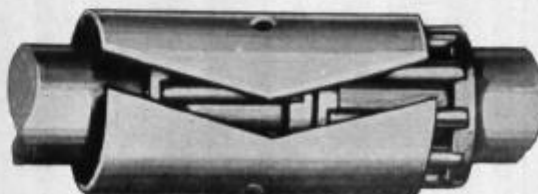
Illust. 2—Zerol-type bevel gear and pinion. Zerol gears are high-grade, precision-machined steel gears with teeth slightly curved and arranged at a slight angle. Tests have shown these gears to be the most efficient bevel gears ever used in a horse-drawn mower.



Illust. 1—Cutaway view of transmission assembly with gear case cover removed. (A) Precision-machined steel gears transmit power from axle to bevel gear. (B) Zerol-type bevel gear and pinion drive the crankshaft. (C) Countershaft and flywheel shaft (rear) carried on ball bearings.

Weight Balanced Over Axle

The gears are located behind the axle, tending to balance the weight and eliminate unnecessary "dead" neckweight. The "two-step" arrangement of the gears and the high attaching point of the coupling bar, likewise, are factors in preventing excessive neckweight. There is no downthrust on the end of the pole in heavy cutting. The No. 9 mower is light in draft and well balanced throughout making it exceptionally "easy" on the horses.



Illust. 3 — High-grade ball and roller bearings reduce friction and wear and help to make the No. 9 an exceptionally smooth-running, light-draft mower.



No. 9 Zerol-Gear Mower

Popular Features



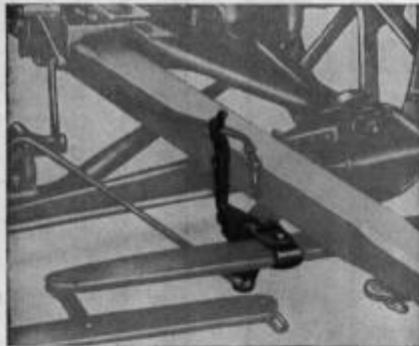
Illust. 1 — Knife-head end of pitman showing the automatic tension connection.



Illust. 2 — End of pitman showing the plain-bearing type of pitman box which is considered regular equipment.

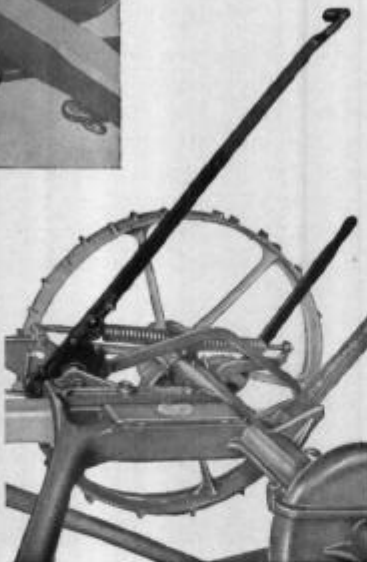


Illust. 3 — Pitman with ball-bearing pitman box, available on special order.



Illust. 4 — The hitch bracket is adjustable to obtain the correct line of draft regardless of size of horses.

Illust. 5 — All levers are latchless type, easy to handle.



Illust. 6 — The main axle is solid, one-piece construction. Note roller bearings with replaceable sleeves and the spring-loaded leather oil seals.

Automatic Pitman

All IH mowers are equipped with pitmans that have an automatic connection to the knife head. The pitman clasps are held to a snug fit around the knife head ball by means of a spring which automatically keeps the clasps at the right tension — neither too tight nor too loose. Any wear which may develop is immediately taken up by the spring pressure without attention on the part of the operator. The pitman is quickly detached from the knife head by releasing the clasps and stepping down on the locking lever.

The other end of the pitman has a tempered steel plate to which the pitman box is bolted. This forms a trouble-free connection that requires no adjustment. Pitmans can be supplied either with plain-bearing (bronze bushing) pitman box having a ball-type nipple oiler or with ball-bearing pitman box equipped with pressure-gun fitting (see mower equipment lists).

Convenient, Latchless Levers

Another feature, much appreciated by users, is the convenient lifting lever with its automatic pawl that latches and unlatches automatically with the movement of the lever. There is no detent to grasp and no bothersome spring latch to release on this lever.

The tilting lever, likewise, has no ordinary latch. It is disengaged from the quadrant teeth by merely pulling the lever to the side. The bar then can be tilted to the desired position.

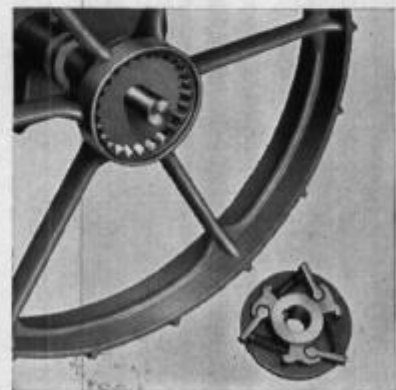
One-Piece Main Axle

The axle is of heavy, one-piece construction. Double roller bearings, operating in replaceable steel sleeves, carry the load and reduce draft. The bearings are automatically lubricated from the gear box. Ratchets located in the wheel hubs transmit power to the axle without lost motion the instant the wheels move forward.

Adjustable Hitch Bracket

The draft bracket is adjustable to three different positions. This permits matching the mower to the team regardless of whether large or small horses are used.

Illust. 7 — The ratchets are located in the wheel hubs, making it easy to inspect or replace pawls and springs.



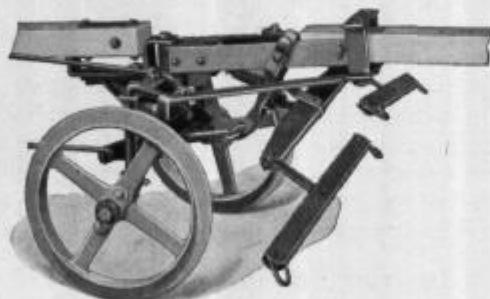
No. 9 Zerol-Gear Mower

Useful Attachments and Equipment for the Mower

Illust. 1 — Reaping attachment for converting mower into serviceable grain reaper for small acreages. Also excellent for harvesting clover and special seed crops. Can be supplied for mowers having 4½ and 5-ft. cutter bars.



Illust. 2 — Buncher attachment for gathering very short hay which cannot be raked easily. Also used for gathering special seed crops. Supplied for 4½, 5, and 6-ft. mowers.

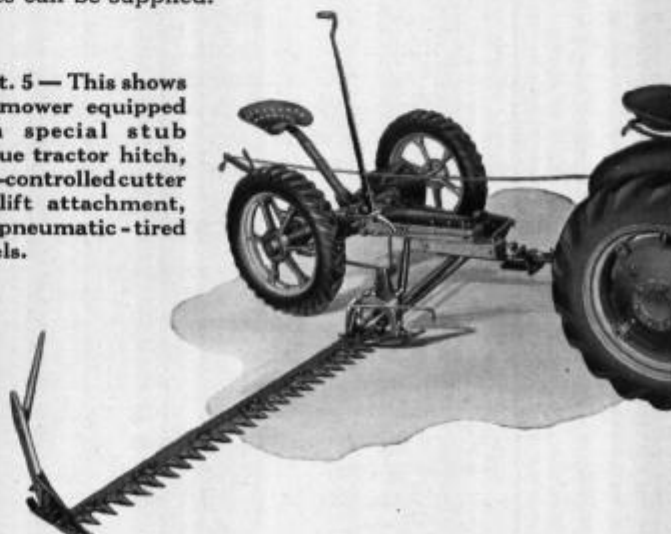


Illust. 3 — The two-wheel tongue truck eliminates tongue "whipping" when cutting over rough ground. Can be supplied with either cast or pneumatic-tired wheels.

Illust. 4 — Weed (high-cut) attachment. Raises bar uniformly (up to 12 inches) so that weeds may be cut over stony ground or over the top of young crops.



Illust. 5 — This shows the mower equipped with special stub tongue tractor hitch, rope-controlled cutter bar lift attachment, and pneumatic-tired wheels.



Reaping Attachment

A reaping attachment for cutting grain and special seed crops can be supplied for use with No. 9 mowers having 4½ and 5-ft. cutter bars. Attachment includes an extra seat over the right wheel for the operator, who rakes the crop onto the platform and retains it until a gavel of the right size is secured, then dumps it upon the ground.

Buncher Attachment

This attachment is designed for gathering very short hay which cannot be raked easily. It is used also for gathering seed crops. The hay is gathered upon a steel-fingered platform back of the cutter bar, and when a sufficient amount has accumulated, the driver dumps it by raising the shield as shown in Illust. 2. This is accomplished with a foot lever. Buncher attachments can be furnished for 4½, 5 and 6-ft. mowers.

Tongue Truck

A two-wheel tongue truck is available as special equipment. The tongue truck is especially useful for preventing tongue "whipping" when cutting over rough fields and for relieving neckweight when special cutter bar attachments are used with the wider-cut mowers.

Weed Attachment

A high-cut attachment for carrying the cutter bar at a uniform height (up to 12 inches) above the ground. Useful for cutting weeds over top of young grain, alfalfa, etc., also for high cutting over stony ground. Consists of wheel for outer shoe and adjustable hook for supporting inner end.

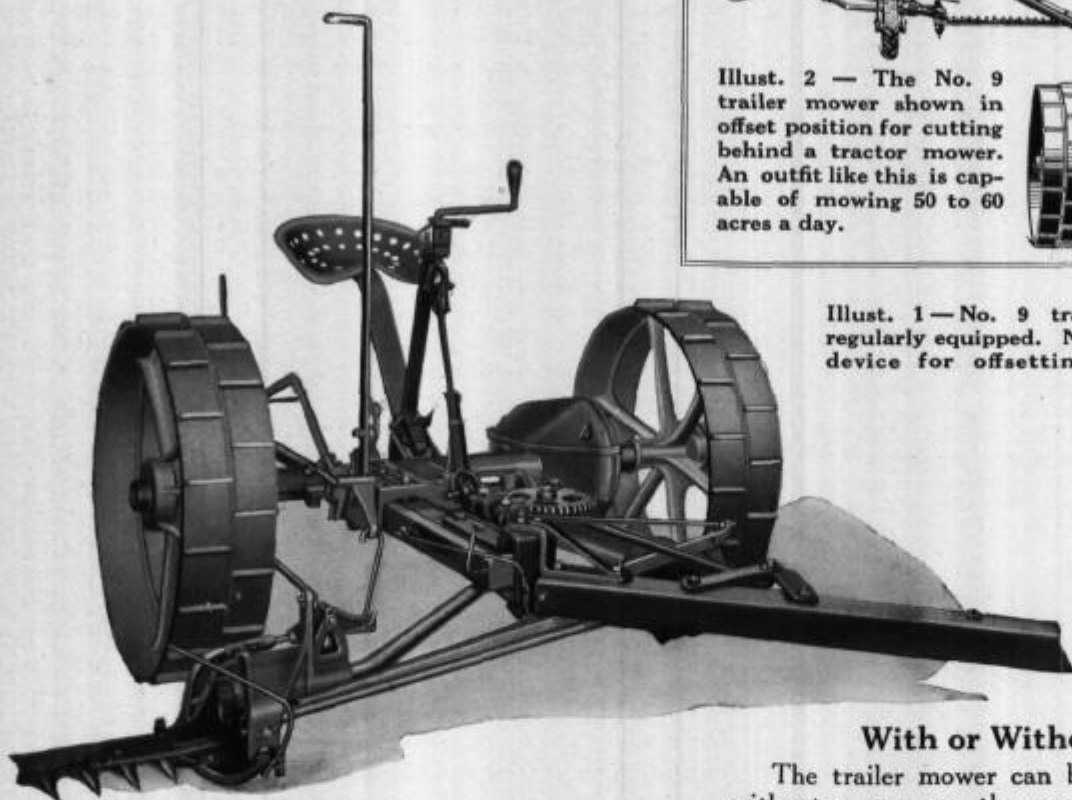
Tractor Hitch—Pneumatic Tires

The No. 9 mower can be equipped with a stub tongue hitch for pulling behind tractors. A special lift attachment, rope controlled from the tractor seat, is also available. Special pneumatic-tired wheels with 5.00 x 21-in., 4-ply tires can be supplied.



No. 9 Trailer Mower

For Use Behind Tractor Mowers

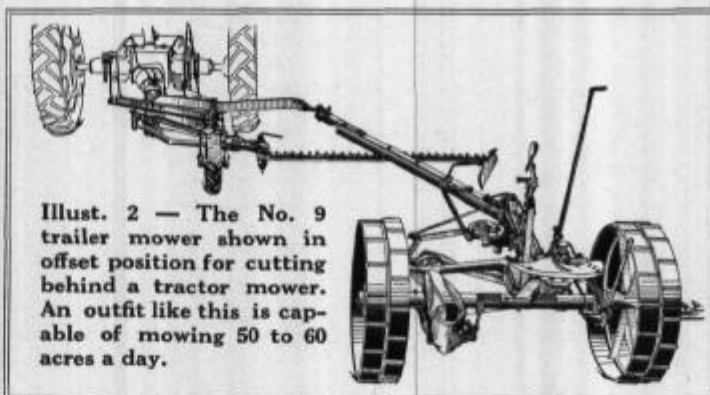


For Big Mowing Operations

Large acreages can be mowed quickly with minimum power and labor by using a second mower behind the tractor-operated mower. The No. 9 trailer mower is a heavy-duty ground-drive machine designed for such work. It is commonly used as a second mower behind a tractor mower, but also may be used singly or in series directly behind the tractor when equipped with suitable hitch connections. The trailer mower is similar in general design to the No. 9 horse-drawn mower but has special gears for efficient operation at tractor speeds. It is also equipped with extra-heavy wheels having 8-in. rims.

Steering Pole Hitch

The trailer mower is regularly equipped with a steering pole hitch for properly offsetting it behind another mower. This hitch consists of a stub tongue controlled by a quadrant and crank so as to maintain the desired offset. The stub tongue is connected, by means of a spring release hitch, to a special hitch angle extending from the tractor (or from the frame of the No. 25-V mower). The spring release acts as a safety device and disengages should the trailing mower encounter an obstacle.



Illust. 2 — The No. 9 trailer mower shown in offset position for cutting behind a tractor mower. An outfit like this is capable of mowing 50 to 60 acres a day.

Illust. 1 — No. 9 trailer mower as regularly equipped. Note the steering device for offsetting the mower.

With or Without Operator

The trailer mower can be operated either with or without a man on the mower seat. When operated without a man the steering crank is locked in place. This keeps the mower in the required off-set position to cut a full swath. When turning corners the trailer mower swings quickly into position so that relatively square corners are cut. A special rope-controlled lift device is available for controlling the cutter bar of the trailer mower from the tractor seat.

Regular Equipment

Seven-foot cutter bar. Two knives. Steering pole hitch with automatic spring release. Mower seat. Plain-type lift. Cast wheels with 8-in. rims. Fast speed gears.

Special Equipment

Cutter-bar lift, rope-controlled from tractor seat. Hitch angle for trailing mower behind No. 25-V tractor mower. Hitch angle for Farmall-A. Hitch angle for Farmalls H, M and MD. Other special equipment and attachments as listed under No. 9 (horse-drawn) mower.

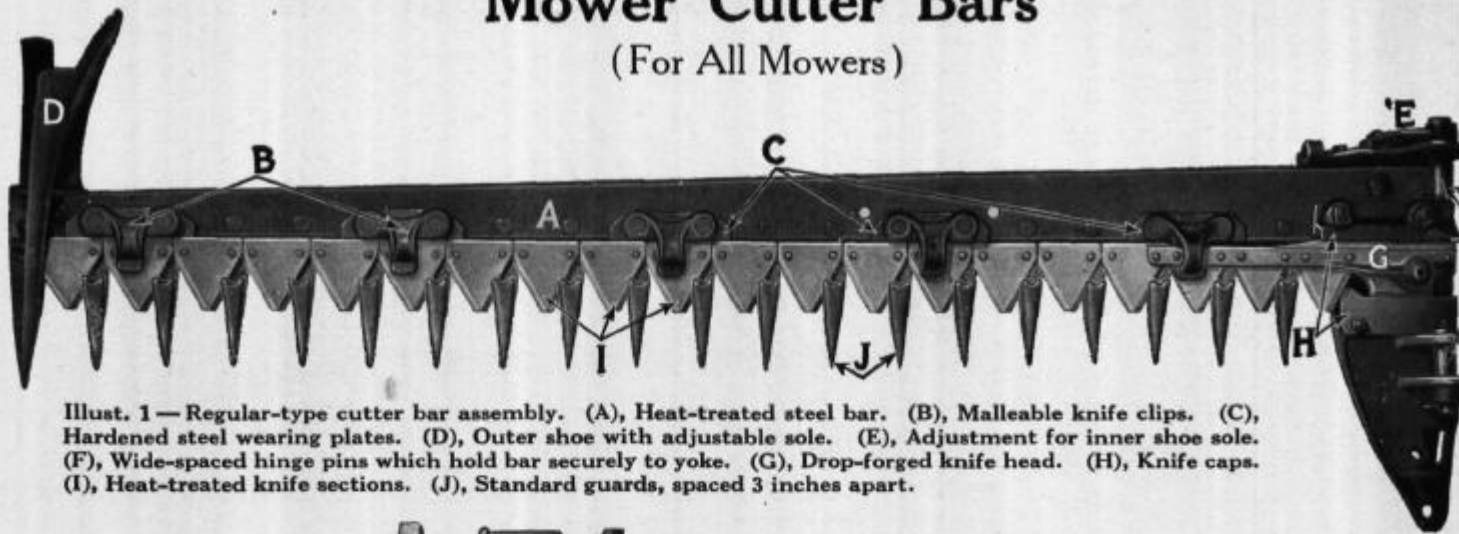
Specifications

Description	Net Weight (Approx.)
7 Ft. Trailer Mower with steering pole hitch	955 lb.

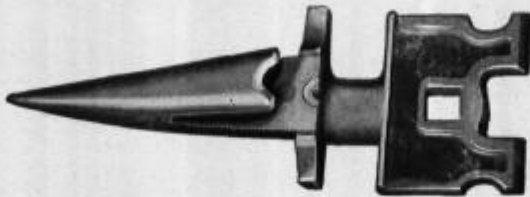


Mower Cutter Bars

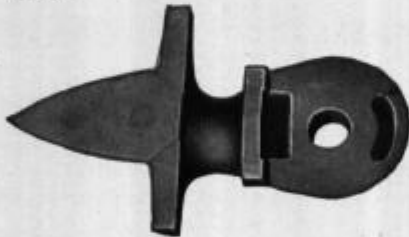
(For All Mowers)



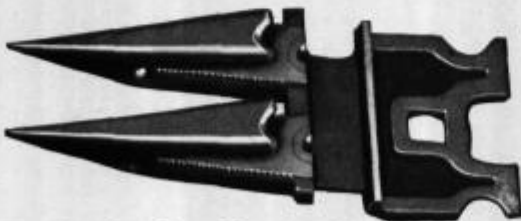
Illust. 1 — Regular-type cutter bar assembly. (A), Heat-treated steel bar. (B), Malleable knife clips. (C), Hardened steel wearing plates. (D), Outer shoe with adjustable sole. (E), Adjustment for inner shoe sole. (F), Wide-spaced hinge pins which hold bar securely to yoke. (G), Drop-forged knife head. (H), Knife caps. (I), Heat-treated knife sections. (J), Standard guards, spaced 3 inches apart.



Illust. 2 — Heavy-duty bars have this type of guard. Guards are longer and heavier than standard type. They are spaced 3 inches apart and have serrated ledger plates. Guards make full contact with each other at base.



Illust. 3 — Stub guard used on special weed bar, pea bar, etc. A blunt, lipless type of guard that will not clog easily. Suitable for cutting heavy weeds, light brush, pea vines, etc. Guards are spaced 3 inches apart, and have smooth ledger plates.



Illust. 4 — Guard used on special Lespedeza bar. These double guards are spaced $1\frac{1}{2}$ inches apart, and have serrated ledger plates.



Illust. 5 — Special $2\frac{1}{2}$ -inch spacing bars have this type of guard. The guards are spaced $2\frac{1}{2}$ inches apart, and have serrated ledger plates.

Oil-Tempered, Heat-Treated Cutter Bar

All IH cutter bars are made of high-carbon steel, oil-tempered and heat-treated. The bar is tapered and reinforced with a rib extending the entire length. During the tempering process a slight upward bend is given the bar, and this tendency to assume an upward curve is further incorporated in the grain or structure of the steel itself. The result is a bar that will not sag but lies perfectly flat when in working position with the outer parts assembled on it. Hardened steel adjustable wearing plates, $5\frac{1}{2}$ inches long, prevent the knife from wearing the bar. The knife sections are high-quality steel, heat-treated so that the edges are extremely hard while the centers remain tough to resist breakage.

Special Mower Bars

A variety of special mower bars are available to meet special needs and conditions.

Heavy Duty —

This bar is substantially constructed for heavy work and for cutting over rough, stony ground. It has heavy-duty guards (See Illust. 2) and is supplied with heavy knife. Guards have standard 3-inch spacing but are longer and heavier than the regular type.

Weed and Brush Bar —

Designed for cutting heavy weeds, light brush, etc. It has heavy, blunt guards that have no lips (see Illust. 3). This feature permits cutting woody stems and stalks with minimum draft and less likelihood of choking. A heavy knife is supplied.

Lespedeza Bar —

A low-cut bar with double guards of special type having $1\frac{1}{2}$ -inch spacing (see Illust. 4). Designed especially for cutting lespedeza and other crops where a low-cut bar is desired. This bar is used with the standard flywheel and provides double the usual number of cuts per sickle stroke. A knife with under-serrated sections is supplied.

$2\frac{1}{2}$ -Inch Spacing Bar —

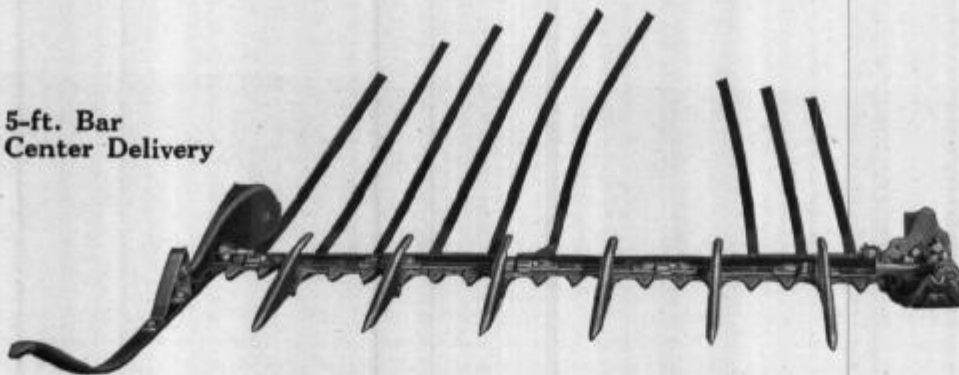
A special bar with guards spaced $2\frac{1}{2}$ inches apart (see Illust. 5). Useful for cutting tough, wiry grasses, etc. Requires special flywheel on mower.



Canning Pea Bar Attachments

(For Tractor and Horse-Drawn Mowers)

5-ft. Bar
Center Delivery



Illust. 1 — Five-foot canning pea bar attachment (ZMB-240) for No. 16 series, No. 25-V, and No. 9 mowers.

These bars are especially designed for efficient harvesting of green canning peas. They are equipped with stub guards, vine lifters, special outside divider, and windrower fingers. The vine lifters are of special design, smoothly finished and streamlined to give the most efficient action. The lifters are hinged and are provided with a tension spring so that the points will follow the ground closely. They pick up all the vines and raise the pods above the sickle so that none will be cut or wasted. The stub guards between the lifters are lipless and will not clog easily. The knife sections extend beyond the ledger plates and cut readily through heavy growths. The windrower fingers turn the cut vines gently into a windrow with the pods mostly inside so that the peas remain fresh. The windrow on the

five-foot bar has a center delivery while the six-foot bar has end delivery. This assures proper windrow spacing so that the windrow is deposited out of the way of the tractor wheels or horses when cutting the following round.



Illust. 2 — Side view showing one of the lifter guards used on the canning pea mower bar. Note the smooth streamlined design, especially suited for raising tangled pea vines. The lifter is hinged to the guard and is provided with a tension spring.

6-ft. Bar
End Delivery



Illust. 3 — Six-foot canning pea bar attachment (ZMA-306) for the No. 16 series, No. 25-V, and No. 9 mowers.

Specifications

No.	Width Cut	Description	Net Weight (Approx.)
ZMB-240	5-ft.	Canning Pea Bar.....	190 lb.
ZMA-306	6-ft.	Canning Pea Bar.....	235 lb.

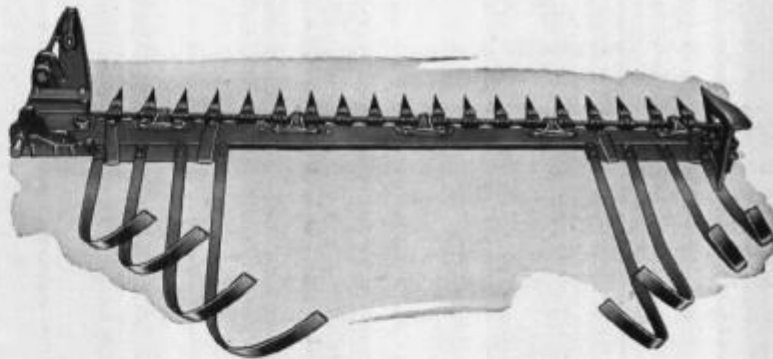


Windrower Attachments

(For All Mowers)

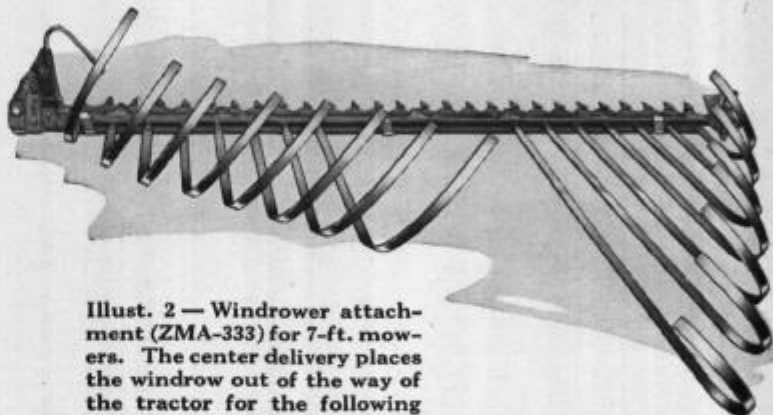
The following windrower attachments are available to meet various requirements.

ZMA-323 is the Green-Crop Windrower, designed especially for windrowing grass silage crops which are intended to be picked up with the green-crop loader. It consists of two sets of four graduated flat steel fingers mounted independently on each end of the cutter bar. The fingers in each unit curve upwards and toward the center of the bar. This attachment can be used with any size or type bar.



Illust. 1 — Green Crop Windrower (ZMA-323) shown attached to a 5-ft. cutter bar. It will fit all sizes and types of IH mower bars.

ZMA-333 is a 7-foot windrower attachment (center-delivery) applicable to any IH mower having a 7-foot cutter bar. It consists of a flat steel bar to which are bolted groups of graduated flat steel fingers. The fingers in each group are spaced three inches apart and are curved upwards and toward the center of the bar. The complete assembly is attached to the mower bar by means of clevises.



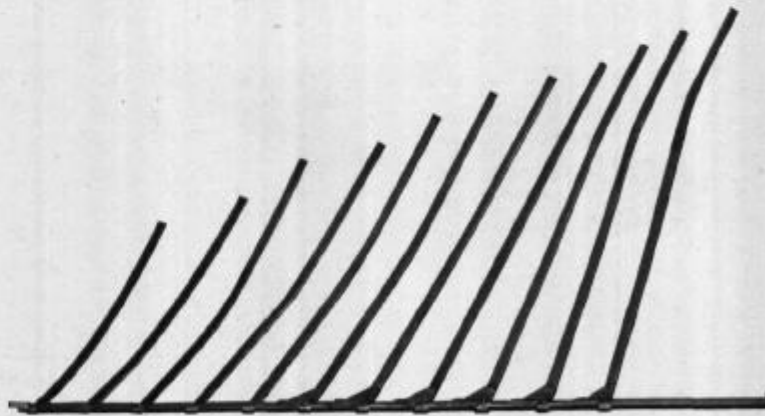
Illust. 2 — Windrower attachment (ZMA-333) for 7-ft. mowers. The center delivery places the windrow out of the way of the tractor for the following round.

M-32611 is a 6-foot (end-delivery) windrower available for all IH mowers having 6-foot cutter bars. It consists of eleven flat steel fingers graduated in such a way as to deliver the windrow from the inner end. This is the same type of windrower as used on the 6-foot canning pea bar attachment.

M-22817 is a 5-foot (center-delivery) windrower available for all IH mowers having 5-foot cutter bars. It consists of a steel bar to which graduated flat steel fingers are secured. There are six fingers at the outer end and three fingers at the inner end. This is the same type of windrower as used on the 5-foot canning pea bar attachment.



Illust. 4 — The 5-ft. windrower attachment (M-22817) will fit any 5 ft. IH mower bar.



Illust. 3 — Windrower attachment (M-32611) for 6-ft. mowers. The end delivery assures proper placement of the windrow from a 6-ft. cut.

Specifications

Number	Description	Size Mower Used With	Net Weight (Approx.)
M-22817	Windrower attachment.....	5-ft.	35 lb.
M-32611	Windrower attachment.....	6-ft.	51 lb.
ZMA-333	Windrower attachment.....	7-ft.	57 lb.
ZMA-323	Green Crop windrower.....	(all sizes)	20 lb.



INTERNATIONAL HARVESTER



Mower Accessories

Knife Grinder

Mower knives can be sharpened quickly and easily by means of this inexpensive, portable knife grinder clamped to a bench or to a mower wheel, as illustrated. The knife is quickly positioned in the grinder and is held firmly by clamps. Turning the crank revolves the beveled stone and automatically moves it up and down over the edges of the sections. The stone grinds two edges simultaneously and at the correct bevel to maintain the original cutting angle of the knife sections. As soon as the two edges are sufficiently ground the knife is moved on to the next. Uniform pressure of the stone against the sections is maintained automatically by a spring. A handle on the frame permits holding the stone in a fixed position at any desired point for grinding out nicks.

Foot Power Attachment

The knife grinder is supplied regularly with crank for hand turning. A foot power attachment is available at small additional cost. This attachment consists of a stand, seat, pedals, chain and sprocket. The grinder is clamped to the frame and is then operated from the seat by means of the pedals.



Illust. 1 — Knife grinder shown attached to mower wheel. A handy tool for grinding mower knives quickly and at the correct bevel. Special stones for grinding tools and gumming saws are available.

Regular Equipment

Bevel stone for mower knives (3-in. spacing). Crank for hand turning. Weight of grinder, including stone, 20 lb.

Special Equipment

Beveled stone for mower knives (2½-in. spacing). Flat stone for grinding tools. Saw gumming stone. Foot power attachment (weight 50 lb.).

Handy Rivet Blocks — Save Time and Labor



Illust. 2 — Rivet block for removing and replacing ledger plates.

For Replacing Ledger Plates

The removal and replacement of ledger plates on mower and binder guards is made easy by means of the convenient rivet block shown above. This block is properly shaped to hold the guard firmly in place and is provided with an opening through which the rivet holding the old ledger plate is driven. The studs make

an excellent anvil on which to place the head of the rivet when riveting the new ledger plate in place.

For Replacing Knife Sections

The rivet block shown below is a handy aid for replacing knife sections. It is formed to support the knife firmly when punching out old rivets and the flat machined face makes an excellent anvil on which to rivet the new sections in place. This block can also be used for replacing the wrist pin from mower flywheels, being provided with proper size holes for this purpose.

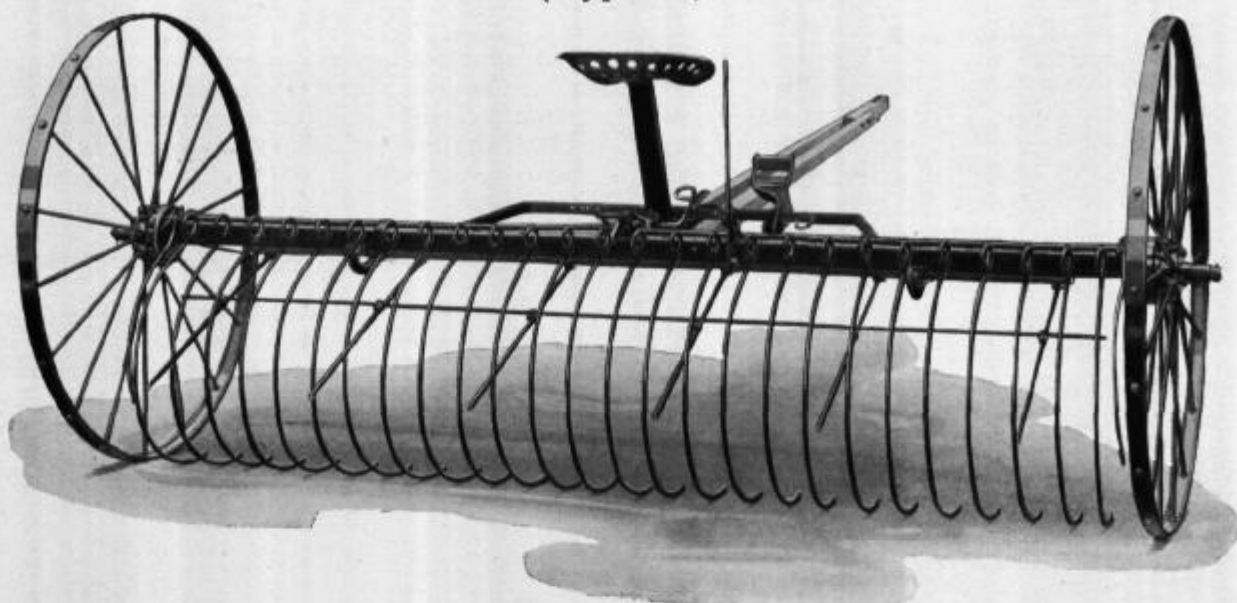


Illust. 3 — Rivet block for removing and replacing knife sections. Also used for removing wrist pin from flywheel.



Self-Dump Hay Rakes

(Type M)



Illust. 1 — Type M, self-dump hay rake, available in 8, 9, 10, 12 and 14-ft. sizes.

Type M self-dump rakes have been standard equipment on farms for many years. The teeth are properly curved to run underneath the hay and gather it gently without digging into the ground. Easy adjustments: (1) set the teeth to carry at different angles; (2) regulate the height to which the teeth raise when dumping. Cleaner rods strip the teeth. A foot control holds the teeth in raised position for turning corners or passing over obstructions. All working parts are easily reversed, interchanged and replaced.

Wheels

Two types of wheels are available—the standard wheel with 16 spokes and plain bearings and the 18-spoke wheel with either plain or roller bearings. The 18-spoke wheel is the "mountain" wheel. It has a wider and heavier tire with outside flange rims. The standard wheel is supplied with outside or inside flanges as ordered. Wheels can be easily reversed and interchanged, giving double life.

Illust. 2 — Teeth with single or double coils and with round or flat points are available.



Regular Equipment

16-spoke wheels with inside or outside flanges as specified. $\frac{25}{64}$ -in. teeth with flat points and single coil (no-coil, round point $\frac{1}{2}$ -in. teeth on cornstalk rakes). Thills which can be made into a tongue.

Special Equipment

Guard teeth. Doubletrees and neckyoke. Solid tongue. 2-wheel tongue truck. "Mountain" wheels (18-spoke, with flanged rims) with plain or roller bearings as ordered. $\frac{1}{2}$ -in. single-coil teeth. $\frac{25}{64}$ -in. double-coil teeth. $\frac{7}{16}$ -in. double-coil teeth with round or flat points. Balancing spring for 8, 9, and 10-ft. rakes. Tractor hitch.

Illust. 3 — Special mountain wheels with either plain or roller bearings are available for rough terrain.



Specifications

Width	No. of Teeth		Net Weight (Approx.) (Reg. Equip.)
	Regular	Special	
8-ft.....	20	25	390 lb.
9-ft.....	24	30	425 lb.
10-ft.....	26	32	450 lb.
11-ft. (cornstalk)	22	29	500 lb.
12-ft.....	32	40	515 lb.
14-ft. (tractor)...	40	48	601 lb.



INTERNATIONAL HARVESTER



Self-Dump Hay Rakes

(Type M)

Rake Teeth

The rake teeth are made of high-quality steel, heat-treated and oil-tempered. They are held by means of clamp sections to the rake beam. The teeth can be replaced individually by removing one section. Clamp construction allows a certain amount of play in the teeth, which permits the teeth to float over uneven ground and get all the hay. The teeth are available in various styles, sizes and spacings (See preceding page).

Adjustable Trip Stop

A convenient pedal controls the engagement of the trip rods with the ratchets. The ratchets are disengaged

by means of a trip stop which can be set in four positions to regulate the height of the teeth in dumping. This permits suitable adjustment in raking thin or heavy swaths and for bunching windrows. The trip stop is within easy reach of the operator, permitting quick adjustments from the seat.

Balancing Spring

A balancing spring is regular equipment on the 11, 12 and 14-ft. rakes. It is also available as special equipment for rakes of other sizes. This spring assists in raising the teeth from the ground when dumping, and eases the shock when the teeth return to normal working position.

Cornstalk Rake



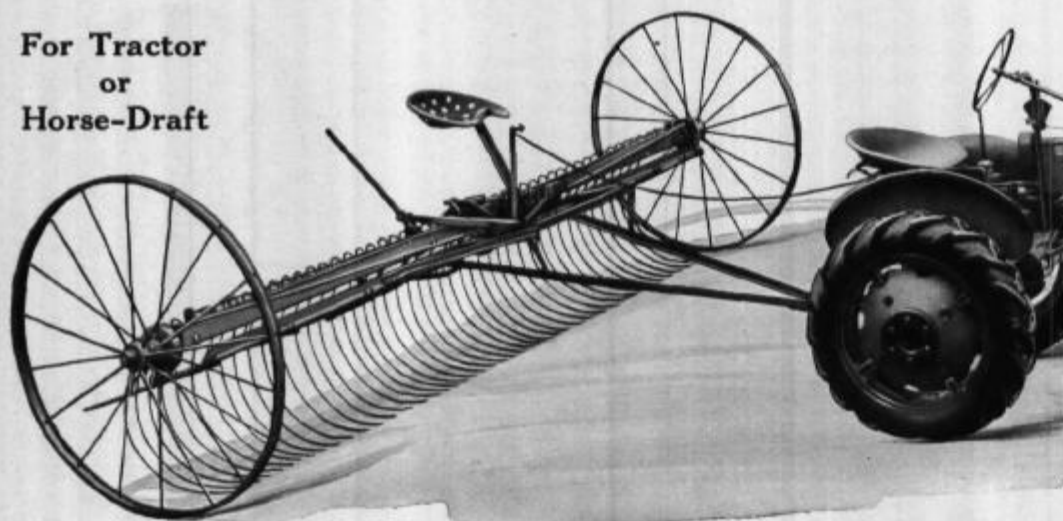
Illust. 1 — Cornstalk rake which is built especially for raking cornstalks and heavy trash. It is made in 11-ft. size with extra-heavy $\frac{1}{2}$ -in. round-point teeth that have no coils. It is available with 22 or 29 teeth.



Illust. 2 — A two-wheel tongue truck is available as special equipment for all self-dump hay rakes.

14-Foot Self-Dump Rake

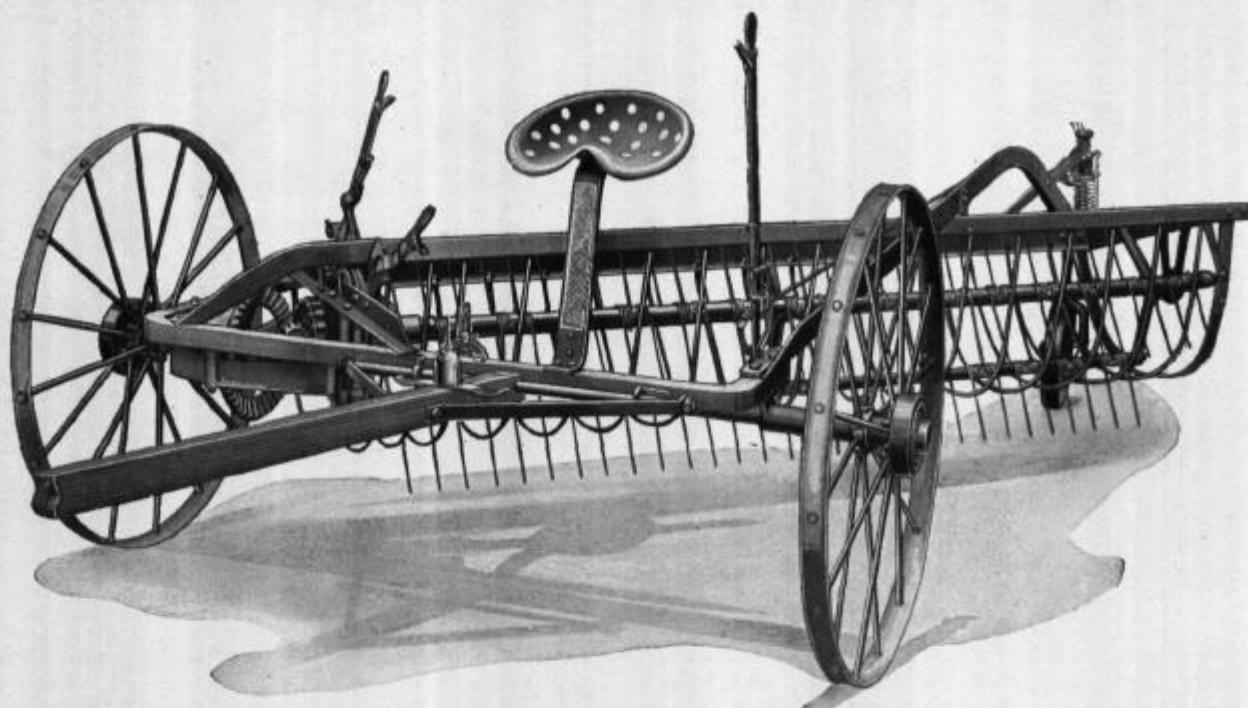
For Tractor
or
Horse-Draft



Illust. 3 — The exceptionally sturdy 14-ft. dump rake fits well into large scale haymaking — gathers two 7-ft. swaths at a time. Wheels are 18-spoke with roller bearings. Supplied with tractor hitch, or pole for horses as specified. Seat, balancing spring and truss rod are regular features. Available with 40 or 48 teeth. Rope trip control for dumping the rake from tractor seat is special equipment.



Combination Side Rake and Tedder



Illust. 1 — The combination side-rake and tedder enables the operator to rake or ted simply by shifting a lever. Ability to rake as well as ted makes this a doubly valuable machine.

The combination side rake and tedder can be converted instantly from a side rake to a tedder or vice versa. This is accomplished by means of a lever which controls the direction in which the rake cylinder revolves.

Side Rake

As a side rake this machine:

- (1) places the mown hay in long windrows on clean stubble.
- (2) Forms loose, airy windrows with the bulk of the leaves inside and the majority of the stems outside. The windrows are proper size to be handled easily by a loader, sweep rake, or pickup baler.
- (3) Travels in the same direction as the mower, working against heads of the hay.
- (4) Can be used for inverting windrows when bad weather conditions make this desirable.

Tedder

As a tedder this machine stirs the swathed hay and fluffs it into light airy bunches through which air circulates readily and hastens curing—a valuable feature when the crop is exceptionally heavy or when it has been rained upon while in the swath.

Made in Two Sizes

The side rake and tedder is made in two sizes

regular and bean special. The latter has a 9-in wider raking width and is especially adapted to the conditions encountered in bean-growing districts. The general construction of the two sizes is otherwise the same.

Double Teeth of Spring Steel

The teeth are made in pairs of heavy-gauge, tempered spring steel. A bolt and clip holds each pair of teeth securely to the tooth bar. Teeth have straight ends. The angle of teeth is adjustable for proper operation.

Regular Equipment

Pole with quick-shift feature. Single caster wheel.

Special Equipment

Two-horse evener and neckyoke. Tractor hitch. Supplemental caster wheel. Extension rim wheels. Main axle extension with truss. Main frame truss for irrigated sections. Quick-attachable teeth. Pneumatic-tired main wheels (4.00 x 36-in. tires). Pneumatic-tired caster wheel (4.00 x 9-in. tire).



Illust. 2 — The teeth, made in pairs, fasten securely to the rake bar by means of a clip and bolt.

Specifications

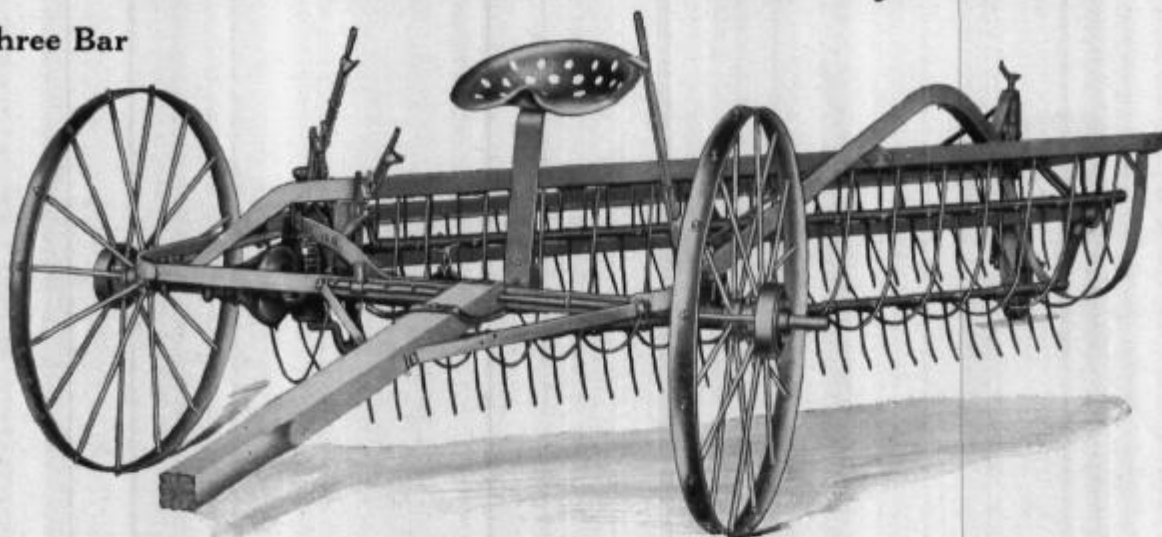
Description	Raking Width	Tooth Spacing	Teeth per Bar	Wheel Tread*	Net Weight (Approx.)
Regular side rake and tedder.....	7-ft. 3-in.	3¾-in.	30	6-ft. 7-in.	906 lb.
Bean special side rake and tedder.....	8-ft.	3¾-in.	32	6-ft. 3-in.	924 lb.
Supplementary caster wheel.....					86 lb.

*Tread of main wheels can be adjusted 4 in. Extension axle increased tread to 7 ft. 9 in.



Enclosed-Gear Side-Delivery Rake

Three Bar



Illust. 1 — The enclosed-gear three-bar side-delivery rake contains the most advanced features in a horse-drawn side rake.

The most advanced features of side-rake construction have been built into this enclosed-gear, three-bar, horse-drawn side-rake. A few of these features are: enclosed main drive gears, pressure lubrication, quick-attachable teeth, electric-welded reel, and spring-mounted frame.

Enclosed Drive Gears

The main bevel drive gear and pinion are completely enclosed and protected from dirt and wear. The enclosure also serves as a protective safety feature.

Pressure Lubrication

All bearings are equipped with hydraulic-type fittings for pressure-gun lubrication. Thus bearings can be quickly and properly lubricated.

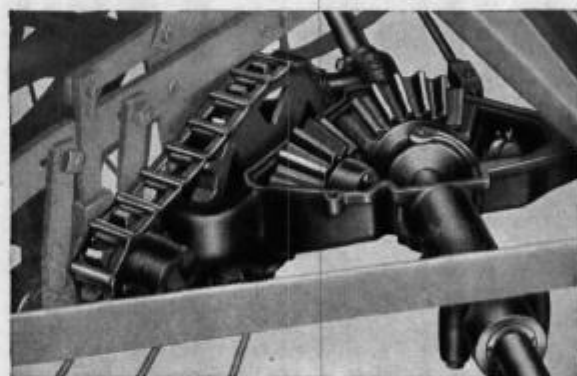
Quick-Attachable Teeth

Teeth are made in pairs, and are held securely to the cylinder bar by means of clips and bolts. Each pair is individually replaceable. A keeper is provided to prevent broken teeth from falling into the hay. Teeth are curved to provide the desired lifting action in handling hay.

Electric-Welded Reel

The reel shaft is made of steel tubing, with shaft extensions electrically welded. Steel plates are welded at the ends and center of the shaft, and the spider arms are securely bolted to these plates. This construction assures strength and rigidity without impeding the replacement of parts when necessary. Tooth-bar

cranks are replaceable. The entire reel unit is free to yield and adjust itself to uneven ground. Ends of the reel are individually adjustable for height and can be set quickly in the desired raking position.



Illust. 2 — The main drive bevel gears are completely enclosed to protect them from dirt and wear. Illustration shows gear box cover removed.

Regular Equipment

Pole with quick-shift feature. Single caster wheel. Quick-attachable, curved teeth.

Special Equipment

Neck yoke and doubletrees. Tractor hitch. Supplemental caster wheel. Extension rim wheels. Main axle extension with truss. Main frame truss for irrigated sections. Pneumatic-tired main and caster wheels.

Specifications

Description	Raking Width	Tooth Spacing	Teeth per Bar	Wheel Tread*	Net Weight (Approx.)
Enclosed gear side-delivery rake.....	8-ft.	3¾-in.	32	6-ft. 7-in.	903 lb.
Supplementary caster wheel.....					90 lb.

*Tread of main wheel can be adjusted 4 inches. Extension axle increases tread to 7 ft. 9 in.



Enclosed-Gear Side-Delivery Rake

Caster Wheels

The enclosed-gear side-delivery rake is regularly equipped with a single caster wheel, which works satisfactorily on level ground. For rough, uneven ground, however, a supplemental caster wheel—available as special equipment—is recommended.

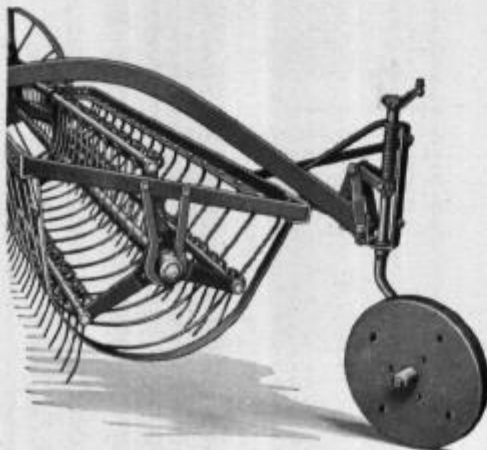
Reel and Basket

The entire reel unit and basket are constructed to yield when passing over a hummock. This prevents breakage, but does not affect the raking efficiency of the machine. The rear end of the main frame, which is carried on a caster wheel, is spring-mounted to provide the desired flexibility over rough ground.



Illust. 1 — End of reel showing the control mechanism which keeps teeth at proper raking angle. Control spider is eccentrically located. Spider arms on tooth cranks govern angle of teeth.

Illust. 2 — The rear of main frame is spring-mounted on caster wheel to provide desired flexibility. Entire reel unit, including basket, yields when passing over hummocks.

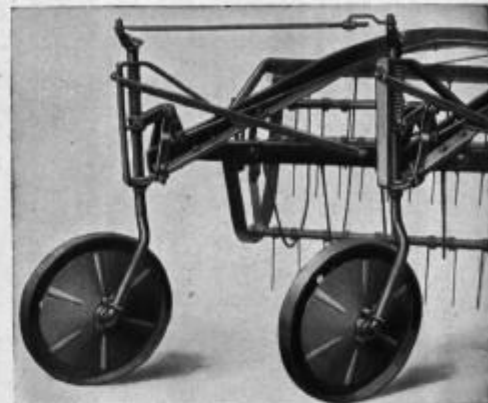


Illust. 3 — Quick-attachable double teeth are easily replaced. Keeper retains teeth in case of breakage. Ends of teeth are properly curved.

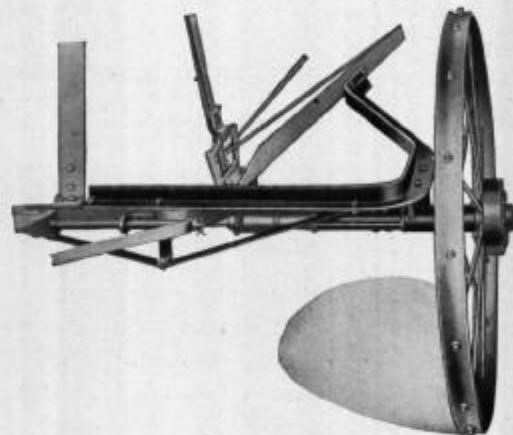
Illust. 4 — Special wheels with extension rims are available for soft ground or irrigated fields. Wheels are 10½ inches wide.



The frame is of sturdy angle steel, and is arched to provide the high clearance required in heavy crops and when turning corners.



Illust. 5 — A supplemental caster wheel attachment is available as extra equipment. The caster wheels are held parallel to each other. Disk-type wheels and hay shields prevent winding.



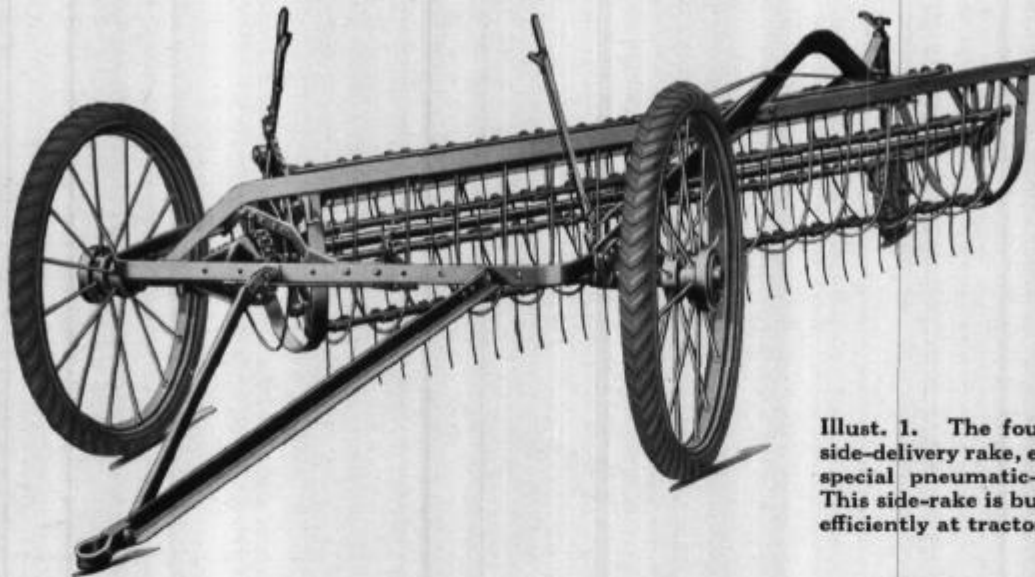
Illust. 6 — Special extension for irrigated sections and where special wheel spacings are required. The left main wheel is moved out 14 inches. Tread becomes 7 feet, 9 inches.

Illust. 7 — "A" indicates main frame truss braces which are regularly included with the axle extension (see Illust. 6) or separately for use in irrigated sections.



Tractor Side-Delivery Rake

(Four-Bar)



Illust. 1. The four-bar tractor side-delivery rake, equipped with special pneumatic-tired wheels. This side-rake is built to operate efficiently at tractor speeds.

The tractor side-delivery rake is designed for fast, efficient raking in heavy crops behind modern tractors. It is sturdily built and contains the most advanced features in side-rake construction. Among these are enclosed main drive gears, four-bar electric-welded reel, ball-bearing reel eccentric, quick-attachable teeth and pressure-gun lubrication.

Enclosed Gears

The main bevel drive gear and pinion are completely enclosed to protect them from dirt and wear, and they are held in permanent alignment. The enclosure also acts as a protective safety device. All bearings are equipped for pressure-gun lubrication.

Regular Equipment

V-type steel tractor hitch. Heavy-duty steel drive wheels. Disk-type single caster wheel. Main frame angle truss. Four-bar, heavy-duty reel. Enclosed main drive gears. Ball-bearing eccentric. Crank-type tooth adjustment. Quick-attachable curved teeth.

Special Equipment

Pneumatic-tired wheels; main drive wheels, 44-in. diameter (4.00 x 36-in. tires); caster wheels, 17-in. diameter (4.00 x 9-in. tires). Steel wheels with extension rims, 10½ in. wide overall. Main axle extension (increases drive wheel tread from 6 ft. 7 in. to 7 ft. 9 in.). Supplemental caster wheel. Extra cylinder drive sprockets to provide higher or lower cylinder speeds. Horse-hitch attachment with seat and spring.



Illust. 2—Screw-type crank adjustment provides a wide range of accurate tooth settings. This type of adjustment control is especially valuable in tractor operation because the setting is positive and subject to change only by the operator.

Specifications

Description	Raking Width	Tooth Spacing	Teeth per Bar	Wheel Tread*	Net Weight (Approx.)
Tractor side-delivery rake	8-ft.	3¾-in.	32	6-ft. 7-in.	970 lb.
Supplementary caster wheel					97 lb.

*Tread of main wheels is adjustable 4½ in. With extended axle, available as special equipment, tread of main wheels is 7 ft. 9 in.



Tractor Side-Delivery Rake

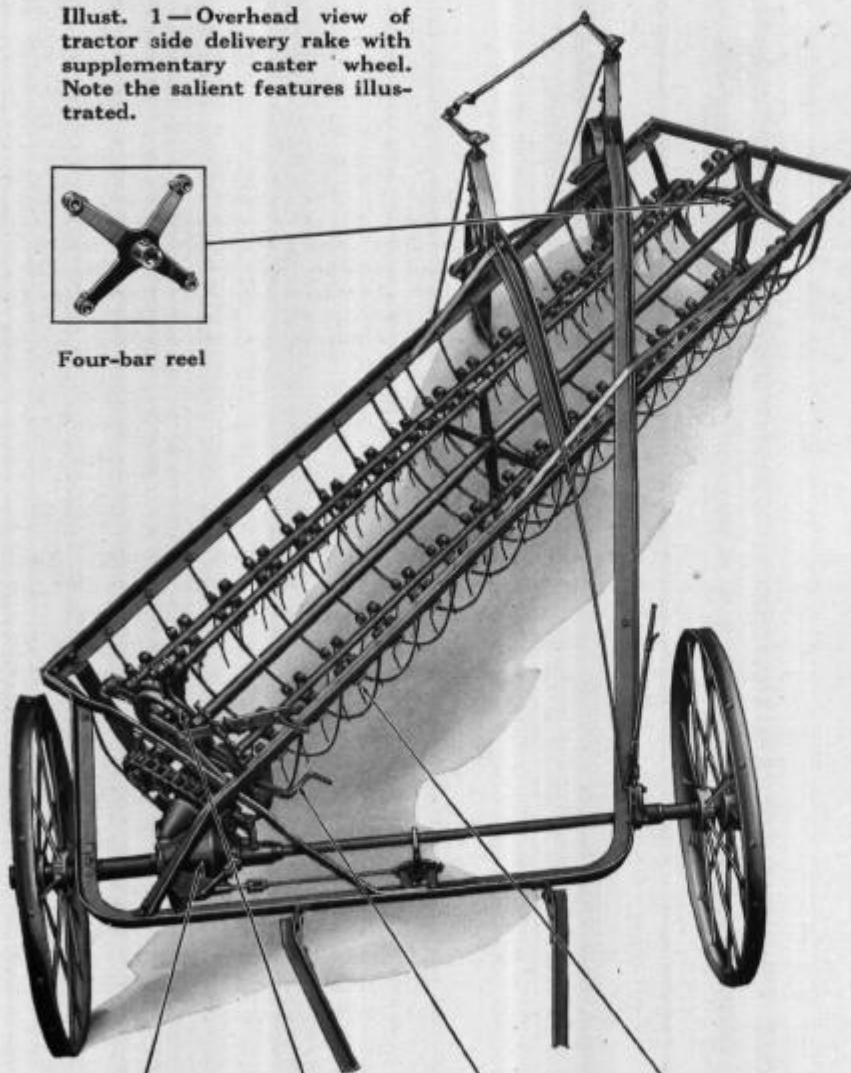
Four-Bar Reel

The reel has four tooth bars instead of the customary three bars used on horse-drawn side rakes. The extra bar provides greater raking capacity to compensate for the higher travel speed of the tractor. It assures properly timed raking impulses for efficient work and the ability to handle heavy crops without waste. The ends of the rake bars are connected to the spiders by electrically welded stud connections.

Illust. 1 — Overhead view of tractor side delivery rake with supplementary caster wheel. Note the salient features illustrated.



Four-bar reel



Enclosed gears



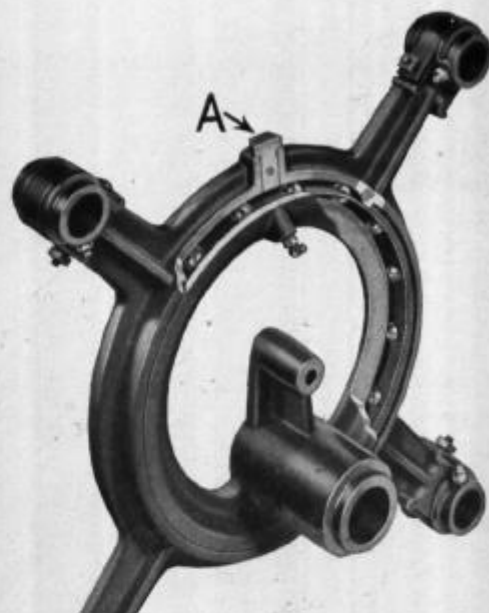
Ball-bearing eccentric



Crank tooth adjustment



Quick-attachable teeth

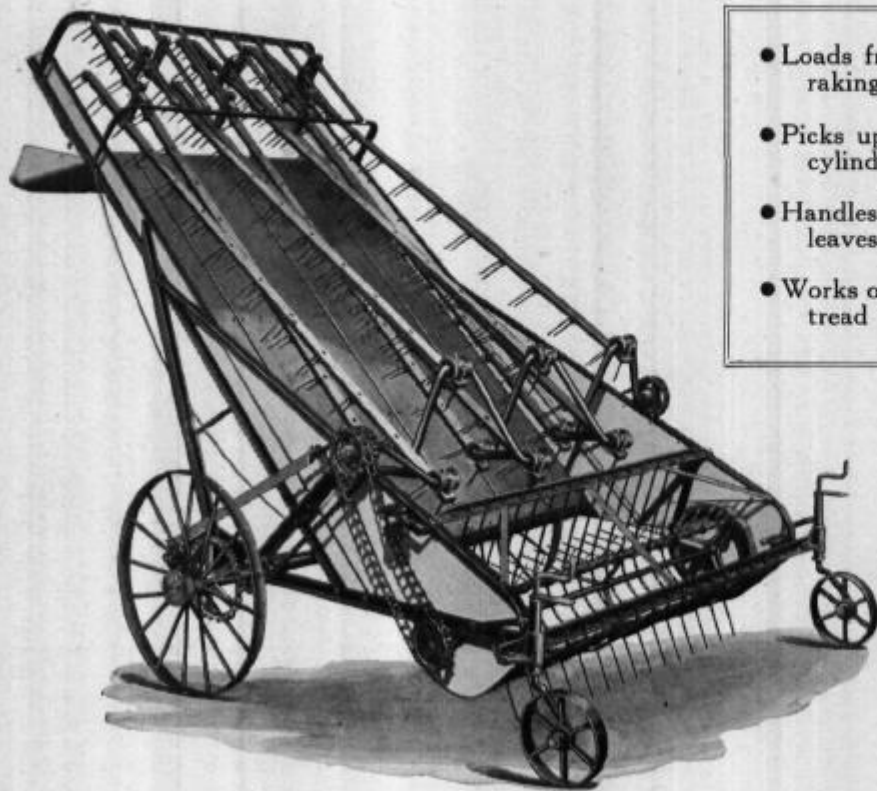


Illust. 2 — Cut-away view of the ball-bearing eccentric which operates inside the control spider. The 16 balls are held in a retainer ring and operate on accurately machined surfaces. "A" indicates the screw plug opening through which the balls are inserted or removed.

Illust. 3 — Pneumatic-tired wheels are available as special equipment. The main drive wheel (below) is 44 in. in diameter; takes a 4.00 x 36-in. tire. Caster wheel (right) is 17 in. in diameter; takes a 4.00 x 9-in. tire.



Cylinder-Rake Hay Loader



- Loads from either windrow or swath . . . 6-ft. raking width . . . adjustable caster wheels.
- Picks up hay without bunching or tearing . . . cylinder and rake bars synchronized.
- Handles hay gently with minimum shattering of leaves . . . 3-throw crankshaft . . . 9 rake bars.
- Works on hillsides and difficult terrain . . . wide-tread wheels . . . adjustable draft brackets.

Illust. 1 — The cylinder-rake hay loader gathers the hay without tearing the windrow apart—a valuable feature when loading legume crops where the leaves shatter easily. This loader has a 6-ft. raking width and is suitable for either windrow or swath loading.

The cylinder-rake hay loader combines the advantages of two popular types of loader construction—a revolving cylinder to pick up the hay from either swath or windrow and rake bars to elevate the hay to the load. The action of the rake bars keeps the hay moving upward and also has a tendency to push it away from the top of the loader. Because of this feature the loader can be operated with minimum help and is sometimes referred to as a one-man loader.

Construction

The machine is well built throughout. The main frame is made of angle steel, braced with angles and gusset plates, assuring strength without excessive weight. The siding and deck are made of heavy sheet steel with turned-over edges. The principal bearing points are equipped with roller bearings, assuring light draft.

Gathering Cylinder

The revolving cylinder gathers the hay and carries it forward until it engages the toothed rake bars, which in turn move it up the loader deck. The cylinder teeth are made of heavy-gauge spring steel, coiled around and fastened securely to the three cylinder bars. As the cylinder revolves each row of teeth is given an eccentric action, which points the teeth straight down when raking

and angles them out of the hay when stripping. Steel stripper rods prevent the hay from winding around the cylinder. Adjustments for carrying the cylinder at any desired height for different hay conditions are made by raising or lowering the caster wheels at the rear of the loader.

Regular Equipment

Steel wheels. Two caster wheels. Quick-release hitch. Solid steel deck.

Special Equipment

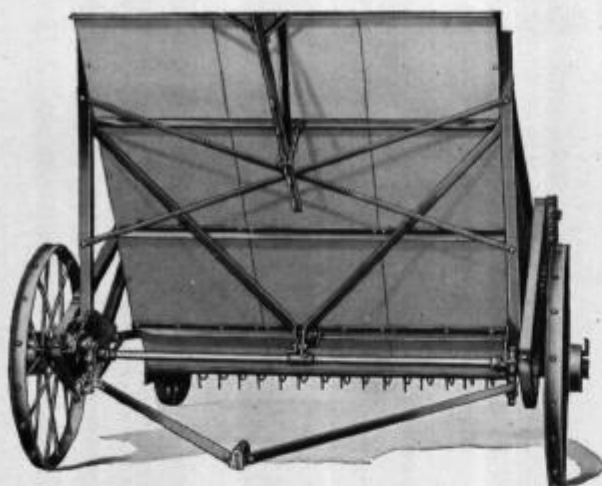
Deck extension and shields for use in short hay. Deck section with teeth. Pneumatic-tired main wheels (4.00 x 30-in. tires). Pneumatic-tired caster wheels (3.00 x 7-in. tires).

Specifications

Overall length in operating position.....	12 ft. 2 in.
Overall width in operating position.....	7 ft. 8 in.
Diameter of cylinder.....	27 in.
Raking width.....	6 ft.
Stroke of rake bars.....	20 in.
Highest delivery point.....	9 ft. 6 in.
Lowest delivery point.....	8 ft. 3 in.
Approximate weight.....	1,150 lb.



Cylinder-Rake Hay Loader



Illust. 1 — The main wheels are mounted outside the frame so that they straddle the wheel tracks of the wagon or truck ahead.

Three-Throw Crankshaft

The crankshaft operating the rake bars is of one-piece construction and is provided with three throws. There are several distinct advantages in having a three-throw crank: (1) It assures a steady, uniform movement free from the jerkiness usually associated with cranks having but two throws. (2) It overcomes all tendency to lock on dead center, and (3) the number of impulses to each revolution of the crankshaft makes it possible to operate the crank smoothly at slower speeds.

Nine Rake Bars

There are nine rake bars, and their movement is properly timed with relation to the cylinder tooth bars so that the hay is moved forward in a steady, unbroken stream, assuring minimum loss of leaves. Wide-faced bearings hold the lower ends of the rake bars to the crankshaft, while the upper ends of the bars are supported by metal hangers operating over wood runners. This simplifies lubrication and is durable and quiet in operation.

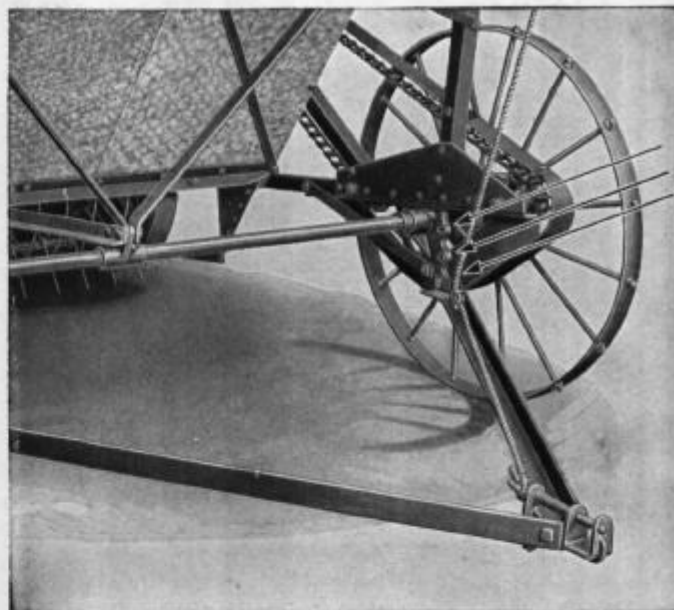
Wide-Tread Wheels

The main wheels are sturdily built, with spokes set staggered and hot-riveted in the tire and hub. The wheels are provided with removable boxes which contain the ratchets and have a simple lever device for adjusting the loader in and out of gear. The main wheels are set out beyond the frame of the loader so as to straddle the wheel tracks of the truck ahead—an important feature when operating over soft ground.

The rear end of the loader is carried on caster wheels which are quickly adjustable for height by means of convenient set screws. The caster wheels are properly located to track with the main wheels ahead.

Two Drive Chains

Two chains operate respectively the crankshaft and



Illust. 2 — The hitch brackets have a 3-point adjustment (see arrows) for adjusting the point of draft when working on hillsides or in extra-heavy crops.

cylinder. The chains are located high enough so that material lying on the ground cannot wrap around the sprockets or get in the chain.

Adjustable Hitch

The hitch consists of steel angles arranged in a "V". Three holes are provided in the hitch brackets for adjusting the point of draft so that the loader will operate properly in all conditions. The hitch can be quickly released from the top of the load by pulling a rope.



Illust. 3 — Rear view of loader, showing the cylinder and rake bars. Note the one-piece, three-way crankshaft which operates the bars.



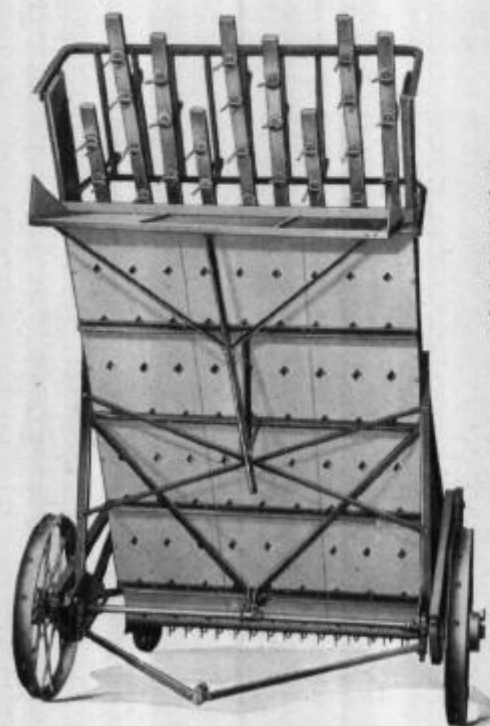
Model R Green Crop Loader

- **Loads All Kinds of Crops**—green crops or cured hay.
- **Handles Crops Gently**—cylinder and rake bars lift material smoothly and without shattering.
- **Loads from Swath or Windrow**—cylinder teeth work at proper angle to pick up all of crop.
- **Accurate Adjustments Easily Made**—caster wheel adjustments for raising and lower cylinder . . . rake bars can be moved to or away from deck . . . adjustable hitch frame angle.

The Model R Green Crop loader is built especially for handling heavy green crops such as peas and beans for canneries and alfalfa, soybeans and other green hay crops for ensiling and dehydration. While the loader is sturdily constructed to withstand the extreme conditions encountered in the loading of these heavy crops, it is also an efficient loader for field-cured hay of all kinds. Throat shields and an extension on the lower end of the deck prevent loss of short crops. The hinged upper section of the deck forms a drop gate to regulate the height of delivery from 8 ft., 3 in. to 9 ft., 6 in.

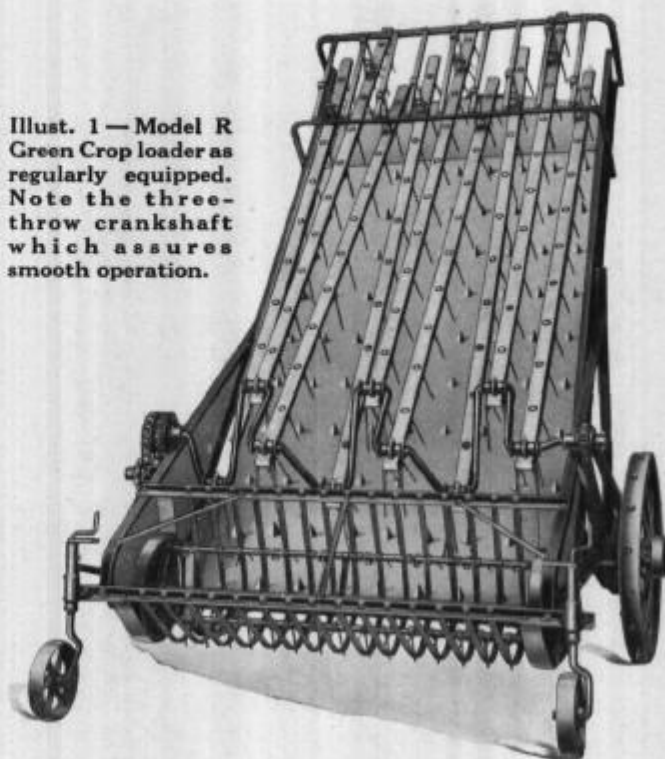
Adjustable to Suit Crop Conditions

Simple adjustments, which can be quickly and easily made, are provided for all types of crops and field conditions. The cylinder can be raised and lowered to fit the crop requirements by means of the screw type



Illust. 2—Rear view of the Model R Green Crop loader showing the wide-tread wheels and sturdy construction throughout.

Illust. 1—Model R Green Crop loader as regularly equipped. Note the three-throw crankshaft which assures smooth operation.



adjustment on the caster wheels. Three hitch adjustments are provided in the draft bracket to adjust the point of draft so that the loader will operate properly in all conditions. With the hitch and caster wheels properly adjusted, the pick-up teeth on the cylinder will operate close to the ground to do a good clean job of gathering. In addition, the rake bars can be moved closer to or farther away from the deck when loading crops of various types—varying from light short hay to extremely heavy green crops. These adjustments are provided in the crankshaft bearing carrier for the lower end of the rake bars and in the supporting frame, on which the rake bars float, for the upper end of the rake bars.

Regular Equipment

Two caster wheels with crank-screw adjustment. Quick-release, adjustable hitch. Deck section with teeth. Deck extension and throat shields.

Special Equipment

Pneumatic-tired main wheels (4.00 x 30-in. tires). Pneumatic-tired caster wheels (3.00 x 7-in. tires). Main wheel lugs.

Specifications

Overall length.....	12 ft. 2 in.
Overall width.....	7 ft. 8 in.
Diameter of cylinder.....	27 in.
Stroke of rake bar.....	20 in.
Highest delivery point.....	9 ft. 6 in.
Lowest delivery point.....	8 ft. 3 in.
Approximate weight.....	1,405 lb.



Model R Green Crop Loader

(Continued)

Three-Bar Cylinder

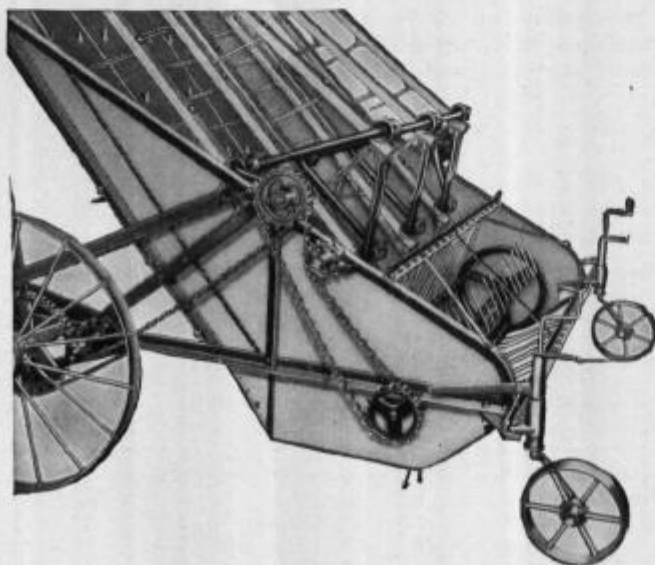
The crop is picked up cleanly from the swath or windrow by flexible, coiled steel teeth mounted on the three-bar cylinder. The working angle of each row of teeth on the cylinder is controlled by a cam arrangement which guides the teeth into the windrow at the proper angle to lift it cleanly and smoothly, then automatically straightens the teeth as the crop is transferred to the loader deck. This type of construction gives clean pickup action even under rough ground conditions. Stationary stripper bars—one for each tooth in the cylinder, strip the hay from the teeth and prevent winding.

Three-Throw Crankshaft

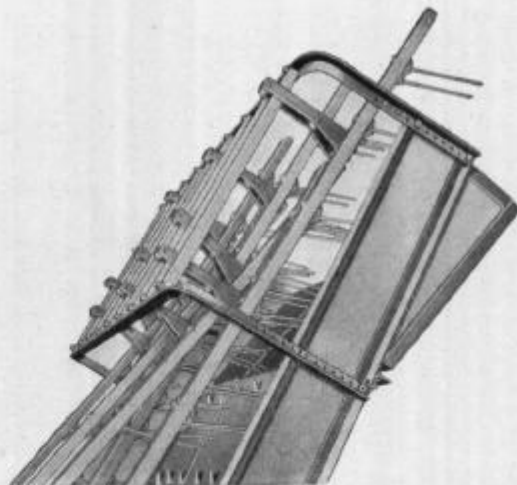
The rake bars are operated by a one-piece, three-throw crank. This provides three impulses to each revolution of the crank, assuring smooth movement of the crop and smooth operation of the loader. There is no jerky movement of the rake bars and any tendency to lock at dead center is eliminated. The three-throw crank also has the advantage of requiring less forward speed to do heavy work. Nine rake bars are used, assuring a more sustained movement of the crop at all times.

Solid-Bottom Deck

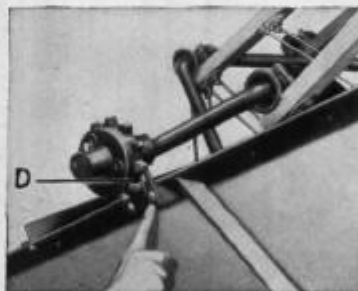
The loader deck is made of heavy-gauge sheet steel, with deep sides and a solid bottom with triangular retarder teeth. This construction assures efficient elevation of all crops. The deck is supported and braced by sturdy, angle-steel members running to the main axle, providing extra strength and rigidity.



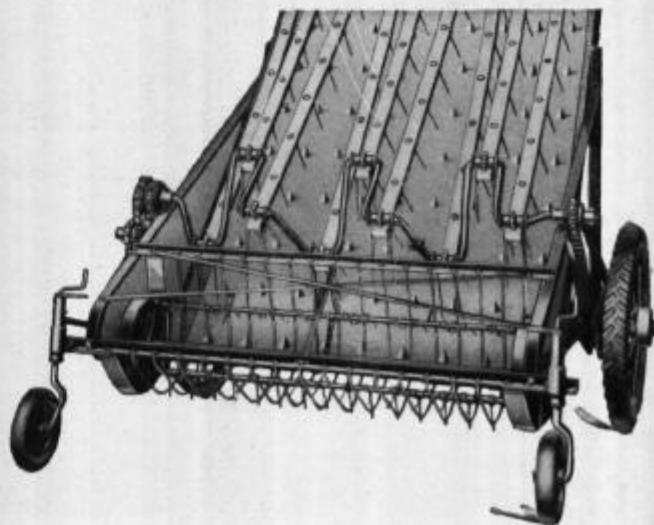
Illust. 1—The crankshaft and cylinder are each operated by individual chains. This construction permits locating the chains high enough so that they will not gather material lying on the ground.



Illust. 2—Upper end of loader. Note how the upper end of the rake bars float on the supports, automatically adjusting themselves to the volume of material being elevated. The supporting frame is also adjustable to suit extreme crop conditions.



Illust. 3—The crankshaft is adjustable to move the rake bars closer to or farther away from the deck. This is an important feature for efficient operation in either heavy or light crops.



Illust. 4—Model R Green Crop loader equipped with special pneumatic-tired main wheels (4.00 x 30-in. tires) and caster wheels (3.00 x 7-in. tires).

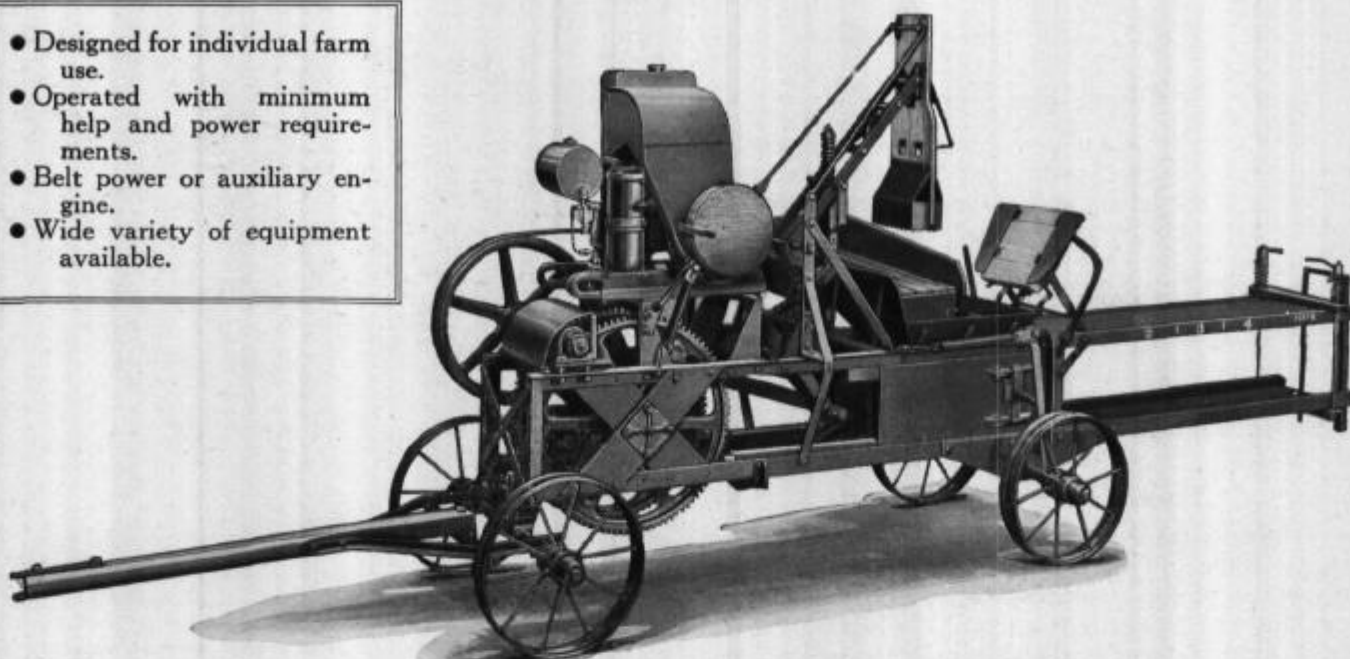


INTERNATIONAL HARVESTER



No. 15 Power Baler

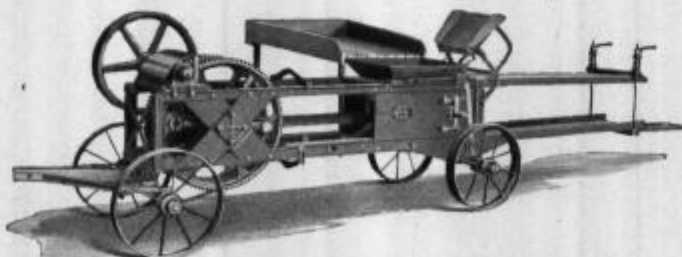
- Designed for individual farm use.
- Operated with minimum help and power requirements.
- Belt power or auxiliary engine.
- Wide variety of equipment available.



Illust. 1 — No. 15 power baler with self-feed attachment and 5 hp. radiator-cooled engine. The No. 15 can be variously equipped to meet the preferences of owners everywhere.



Illust. 2 — No. 15 baler equipped for belt power operation and with self-feed attachment.



Illust. 3 — The No. 15 power baler can be supplied as a simple, hand-feed machine, less attachments.

The No. 15 is a handy power baler designed especially for individual farm use or for limited custom baling. It is easily operated by any light farm tractor or it may be equipped with an auxiliary engine. The baler is suitable for making medium-size bales ranging up to 100 pounds. Though relatively light in weight, the No. 15 is sturdily constructed and contains many improvements in baler design. An outstanding feature of this machine is its wide variety of equipment available to meet the requirements of owners everywhere. The No. 15 can be supplied as a simple, hand-feed press for belt power operation, or with a variety of equipment combinations including self-feed attachment, engine attachment, etc. as listed under Special Equipment.

Regular Equipment

Hand feed. Block setter and 3 division blocks. Stub tongue tractor hitch. Steel wheels. Single flywheel. Feed table.

Weight of No. 15 (belt power) baler with regular equipment as listed above 2,033 lb.

Special Equipment

Self-feed attachment	199 lb.
Type LB, 5 h.p. engine (radiator cooled)	482 lb.
Attaching parts for LB engine	83 lb.
Attaching parts for No. 62 harvester-thresher engine	82 lb.
Double flywheel in lieu of single	add 181 lb.
Wheels with 6.00 x 16-in. pneumatic tires, in lieu of steel wheels	add 276 lb.
Countershaft attachment	178 lb.
Side tension attachment	28 lb.
Overtire attachment for steel wheels	90 lb.
Signal bell	4 lb.

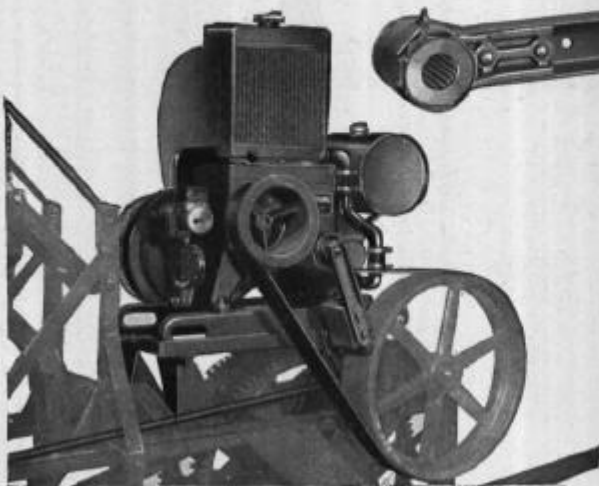
All weights are approximate.

Specifications

Size of bale chamber	16 x 18 in.
Size of feed opening	16 x 22 in.
*Capacity per hour	1 to 1½ tons
Weight of bales . . . . .	.65 to 100 lb.
Speed of flywheel	120 to 180 r.p.m.
Stroke of pitman (per minute)	15 to 22
Engine pulley speed	300 to 500 r.p.m.

*With self-feed attachment

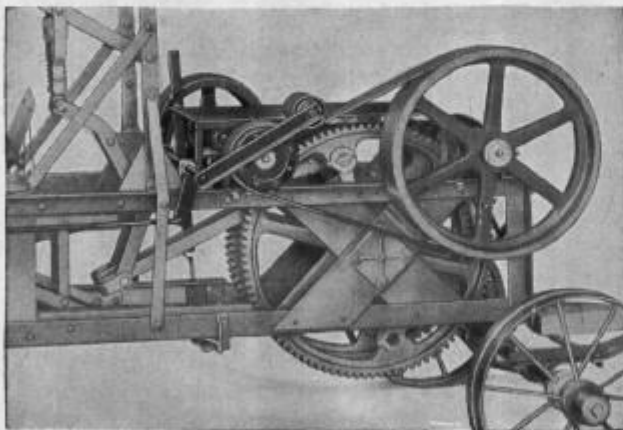
No. 15 Power Baler



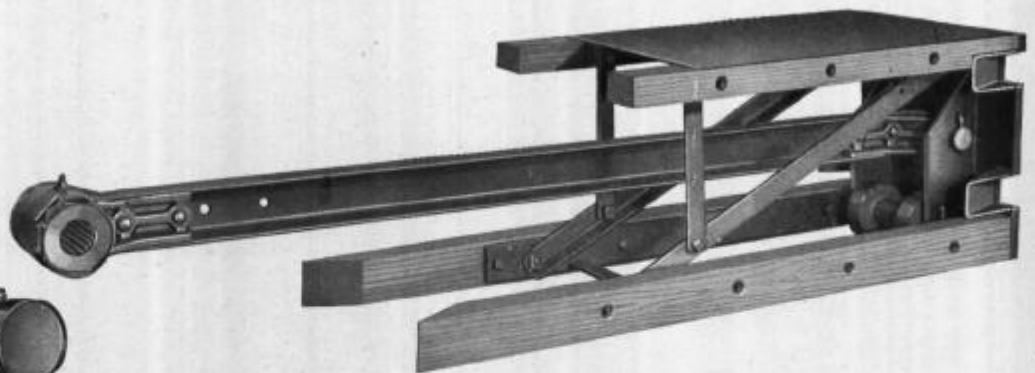
Illust. 1—The engine attachment, available as special equipment, consists of a Type LB, 5 hp. engine with radiator cooling system, and all necessary attaching and operating parts. The engine supplies adequate power for baling in all normal conditions.



Illust. 2 — Pneumatic-tired wheels are available as special equipment. Wheels can be supplied also less tires and tubes when so ordered. Tire size is 6.00 x 16-in.



Illust. 3—The countershaft attachment, supplied extra, permits operating the baler at its recommended speed with various makes and models of tractors having different diameter belt pulleys.



Illust. 4—The plunger head is sturdily constructed. Note the roller bearing at the outer end of the pitman, also the double-unit roller on which the head moves.

Engine Attachment, complete with attaching parts, consists of a Type LB, 5-hp. engine with Sirocco-type radiator cooling system, oil air cleaner, spark arrester, flanged pulley with belt, idler pulley clutch, engine brake, and brake control lever. Flanged pulleys are available in two sizes—8-inch for use with self-feed and 6-inch for hand-feed press.

Special attaching parts are also available for owners who wish to transfer the engine from their No. 62 harvester-thresher to the baler.

Self-Feed Attachment—Saves time and labor in feeding, thus enabling capacity outputs to be maintained. The feeder has a powerful thrust and saw-tooth grip which compresses the charge and forces it evenly to the bottom of the feed opening. The head is well made and protected by a safety spring.

Plunger Head—Sturdy, welded steel construction with hardwood guides at top and bottom. Operates on a large, double-unit steel roller, avoiding friction. Heavy steel pitman is equipped with roller bearing at outer end.

Bale Chamber—16 by 18 inches, has replaceable steel bottom plate.

Adjustable Tension—Convenient hand screws are provided for adjusting the tension evenly to all sides of the bale.

Feed Table—Wide and convenient. Can be attached to either side.

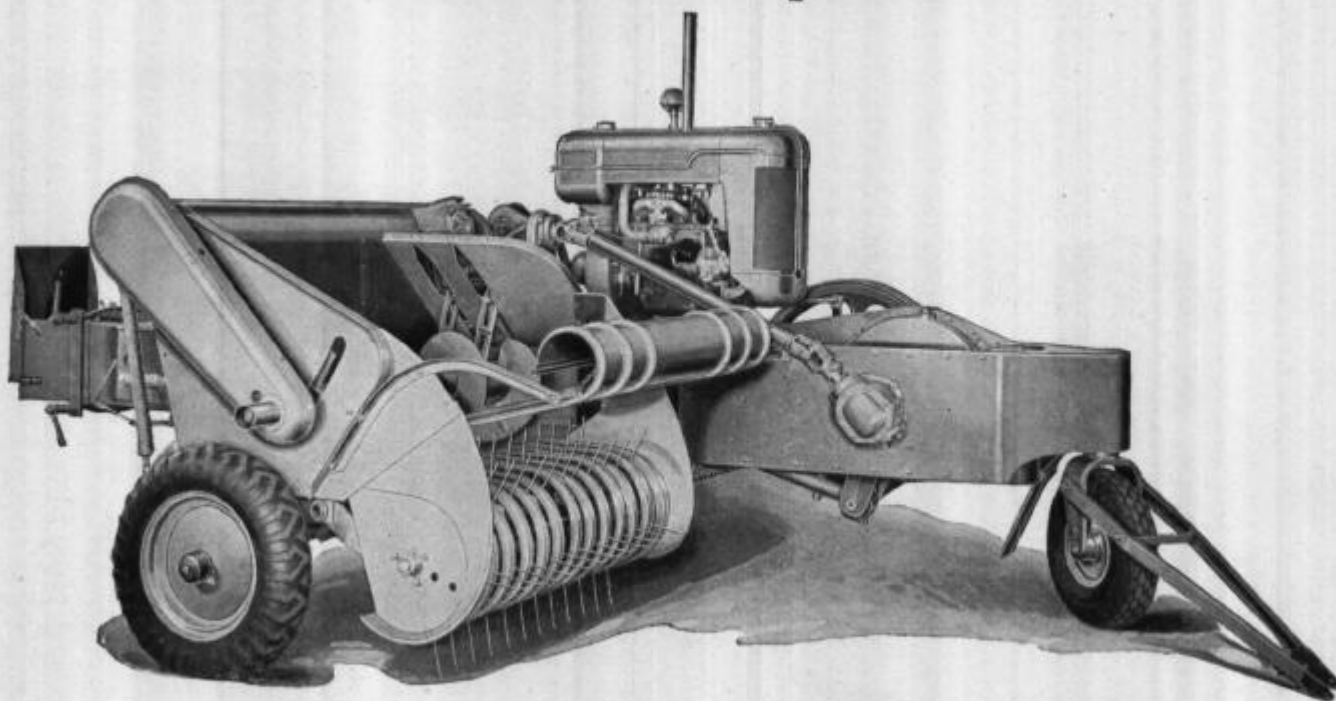
Wheels—Sturdy, low-set steel wheels are regular equipment. Operate on double roller bearings. Dust-tight hub caps retain the lubricant. Special pneumatic-tired wheels can be interchanged on the regular axles. Tires are 6.00 x 16-inch.

Side-Tension Attachment—Consists of additional side angles for the bale chamber extension. Useful when baling extremely short hay or straw.

Lubrication—All bearings on the machine are equipped with hydraulic-type fittings for convenient, pressure-gun lubrication.



No 50-T Pickup Baler



Illust. 1 — No. 50-T pickup baler with single-wheel forecarriage, supplied as special equipment.

- Automatic baling —
No man required on machine.
- Entirely self-feeding —
Pickup gathers the windrowed crop.
Open-end auger and packer fingers move it direct to baling chamber.
- Each charge is sliced —
Makes neater bales.
Sliced hay is easier to feed.
- Automatic bale separation —
Needles separate bales.
No division blocks required.
- Faster baling —
Up to 6 tons per hour.
- Firm, symmetrical bales —
Adjustments provided to assure even density.
- Self-tying —
Twin knotter tying mechanism designed to use heavy twine.
- Modern design —
Maximum utility and long life with minimum weight and power requirements.

The No. 50-T pickup baler automatically picks up hay or straw from the windrow and ties it in firm, symmetrical bales which are dropped on the ground as the outfit moves over the field. It does this without manual effort and with only a tractor driver required to manipulate the entire outfit.

Large Capacity

Neatly formed and firmly tied bales of sliced hay, weighing from 40 to 65 pounds each, can be turned out at the rate of 3 to 5 bales per minute, or up to 6 tons per hour, depending upon the kind of hay and the condition of the field. Designed primarily for windrow baling, the No. 50-T can also be used for stack baling.

Pick-up and Floating Auger

The height of the pickup is adjustable to handle different hay and straw crops most efficiently. Spring steel fingers gently lift the windrowed hay like a carpet to prevent loss of leaves and deliver it to the cross deck. Here a floating open-end auger, with the assistance of packer fingers, moves it directly to the baling chamber. No belt or chain cross-conveyor is used.

Selective Pickup Drive

The pickup cylinder may be power-driven, ground-driven, or a combination of both can be used. This permits operating the pickup at a fixed speed, or at a speed coordinated with the travel speed of the machine, or at a controlled maximum and minimum speed when both drives are used in combination. The latter is made possible by over-running clutch members. Simple adjustments are provided for selecting the type of drive desired.

Regular Equipment

Four-cylinder, 14 hp., engine. Rigid tractor hitch with supporting jack. Wheels with pneumatic tires, 6.00 x 16-in., 6-ply on right; 7.50 x 16-in., 8-ply on left.

Special Equipment

Single-wheel forecarriage with 6.00 x 9-in., 6-ply tire. Bale counting attachment.

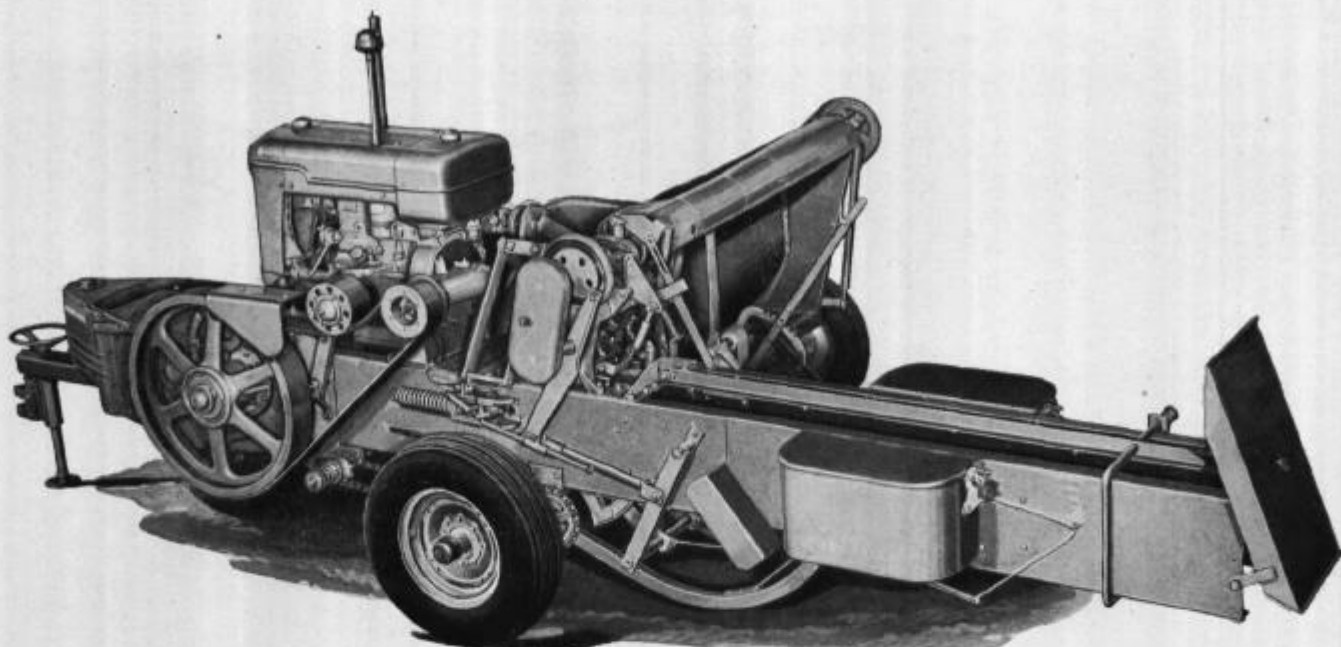
Weights

Baler complete with engine and regular equipment 4,020 lb.
Single-wheel forecarriage attachment 121 lb.



No. 50-T Pickup Baler

(Continued)



Illust. 1 — No. 50-T pickup baler regularly equipped with 4-cylinder engine, pneumatic tires, and rigid hitch with jack support.

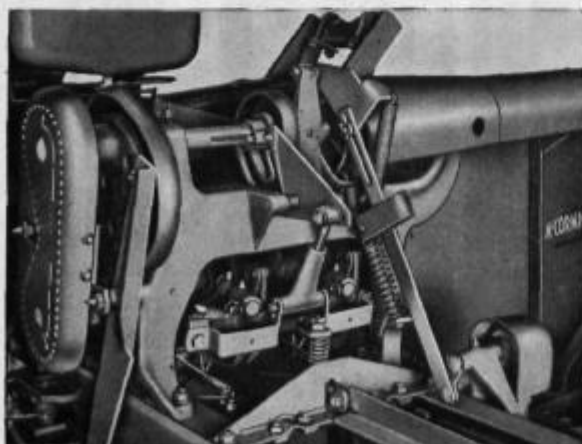
Neat Bales of Sliced Hay

As the hay enters the bale chamber, a knife, mounted on the plunger, shears each charge of material against a ledger plate on the side of the feed opening. This assures smooth bales, free from straggly ends, and also makes it easier to feed from the bale when opened. The packer fingers are adjustable to regulate the placement of material in the bale chamber so as to assure uniform density from side to side. Tension adjusting clamps are provided at the rear end of the bale chamber for regulating the weight of the bale. Wedges also are provided for restricting the movement of material through the chamber when baling light, fluffy material not easily compressed. A metering wheel on the side of the chamber measures the length of the bale and times the separating

or block action of the needles. The needles enter the bale chamber in timing with the stroke of the plunger so that they are protected from pressure or contact with the material being baled by the grooved plunger head. The needles not only place the twine bands in position for tying but act as a division block for separating the bales. Two twine knotters, similar in principle to the familiar binder knotter but heavier, tie the two twine bands simultaneously. The twine used is extra heavy and is specially made for this purpose (see following page).

Data and Specifications

Size of bale chamber.....	14 x 18 in.
Weight of bales.....	40 to 65 lb.
Length of bales.....	27, 32, 34, 36, or 42 in.
Bale length control.....	Automatic metering wheel
Bales per minute.....	2 to 5
Tons per hour.....	Up to 6
Type of feed.....	Floating auger and packer fingers
Transmission.....	Enclosed automotive type
Length of plunger stroke.....	33 in.
Number of strokes per minute.....	45
Flywheel diameter.....	33 in.
Bale separation.....	Timed needle action
Bale tying.....	Automatic twine ties
Charges sliced by.....	Knife on plunger
Width of pick-up.....	54 in.
Pick-up drive (selective).....	Power, ground, or combination
Hitch (regular).....	Rigid (direct connected)
Hitch (special).....	Single wheel forecarriage
Tire Sizes:	
Right wheel.....	6.00 x 16 in.
Left wheel.....	7.50 x 16 in.
Forecarriage (special).....	6.00 x 9 in.
Overall width of baler.....	9 ft. 2 in.
Overall length (not including hitch).....	16 ft. 10 in.
Approximate weight.....	4,020 lb.
Engine (Continental).....	4-cyl., 14 hp.



Illust. 2 —The self-tying mechanism has two needles and two knotters. Special, heavy baler twine is used.



INTERNATIONAL HARVESTER



International Baler Twine



Illust. 1 — Complete directions are printed on the ball wrapper for use in different types of hay balers. The ball wrapper helps to keep the twine toward the end of the ball from tangling.

International baler twine is especially made for automatic twine-tying pick-up balers, tying either hay or straw bales. This twine is made of carefully selected all-sisal fiber, spun extra heavy (270 lbs. tensile strength) and put up in 20 lb. balls. It is treated for protection

- Treated for protection against mildew and rot—also with insect and rodent repellent.
- Treatments of twine does not affect natural hay aroma.
- Made from carefully selected, long fiber.
- Runs freely without tangling.
- Put up in a convenient 40-lb. package.



Illust. 2 — Baler twine is put up in a 40-lb. package which is convenient to handle. It is spun uniformly under a rigid system of inspection.

against rot, mildew, and rodents. The treatments do not affect the natural aroma of the hay so that livestock will eat it with relish.

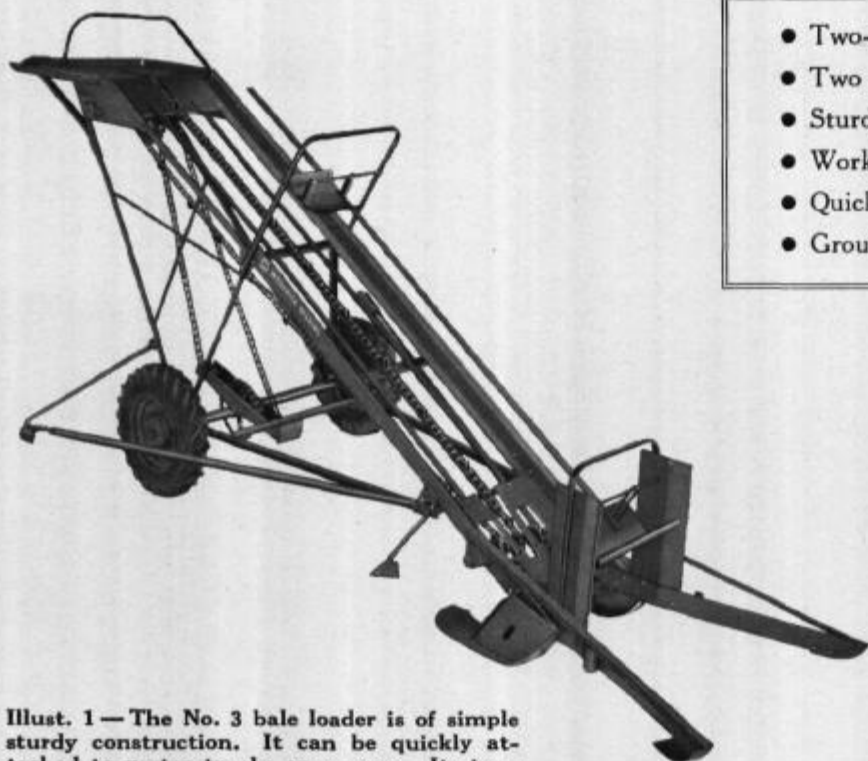
International baler twine is full length, assuring maximum economy. One ball will tie approximately 250 (36-in.) bales of hay. Two balls come in a package weighing 40 lbs., making it convenient to handle and economical to buy. Complete directions for use are shown on each ball wrapper.

When estimating twine requirements, consideration should be given to straw baling as well as hay baling. Under average conditions approximately $\frac{3}{4}$ -ton of straw per acre can be recovered behind the combine.

Specifications

Average number of 36-in. bales tied by one ball.....	250
Average length of twine, feet per pound.....	225
Tensile strength.....	270 lb.
Gross weight of package (2 balls).....	40 lb.

No. 3 Bale Loader



Illust. 1 — The No. 3 bale loader is of simple sturdy construction. It can be quickly attached to motor trucks or wagons. Its two-chain positive pickup system is ground driven.

The No. 3 bale loader picks up standard rectangular size bales left in the field by pickup balers. Two men can easily handle the entire loading operation — the driver of the truck and one man to arrange the bales being loaded. The machine is held firmly but flexibly to the left side of the tow vehicle by three strong steel arms which are simple to attach and detach. The loader is regularly equipped with parts to enable trailing the machine in transport to and from the field.

Works with Trucks and Wagons

The No. 3 bale loader can be attached to motor trucks, farm trucks, and wagons. It can be used with any four-wheeled farm wagon or truck by adjusting regularly supplied attaching parts. Rugged construction permits smooth, quiet loading operation. The machine eliminates heavy lifting and does a quick, efficient job. It is the ideal companion to the 45 and 50T pickup balers.

Ground Driven

Ground-driven by two pneumatic-tired wheels, the loader assures great dependability and smooth operation. The two-chain drive system is constructed to assure powerful loading action and long life. The loader can be steered by the truck to which it is attached to pick up bales lying at sharp angles to the line of travel.

- Two-chain, positive pickup.
- Two men handle entire loading operation.
- Sturdy, lightweight construction.
- Works with motor trucks and wagons.
- Quickly and easily attached or detached.
- Ground driven by pneumatic-tired wheels.



Illust. 2 — The loader makes an easy job of loading heavy bales in the field. It works fast and efficiently, eliminating effort and getting the job done quickly.

Parts for Quick Attaching

The No. 3 bale loader can be hitched to a truck or wagon by means of quick attachable parts. Regular parts, such as the throwout clutch and transport hitch, make it easy and convenient to transport the loader. These parts save time and work when attaching and using the loader. Upon completing the job, the loader can be quickly detached.

Sturdy, Light-Weight Construction

Sturdy, lightweight construction of the bale loader offers great utility and long service. Light weight allows for easy handling and fast operation in the field. Simple construction permits quick adjustments to suit most trucks or wagons. Sturdy chains and elevator do a fast efficient loading job and enable rapid hauling of baled hay to the barn.

Specifications

Size of bales handled.....	Standard rectangular sizes
Wheelbase.....	56 in.
Overall height (in operation).....	97 in.
Overall length.....	180 in.
Bale elevator	{Two-chain pickup Single-chain elevator
Drive.....	Two-wheel ground type
Attaching parts and transport hitch.....	Regularly supplied
Approximate weight.....	688 lb.



THE INTERNATIONAL HARVESTER COMPANY



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GRAIN HARVESTING MACHINES

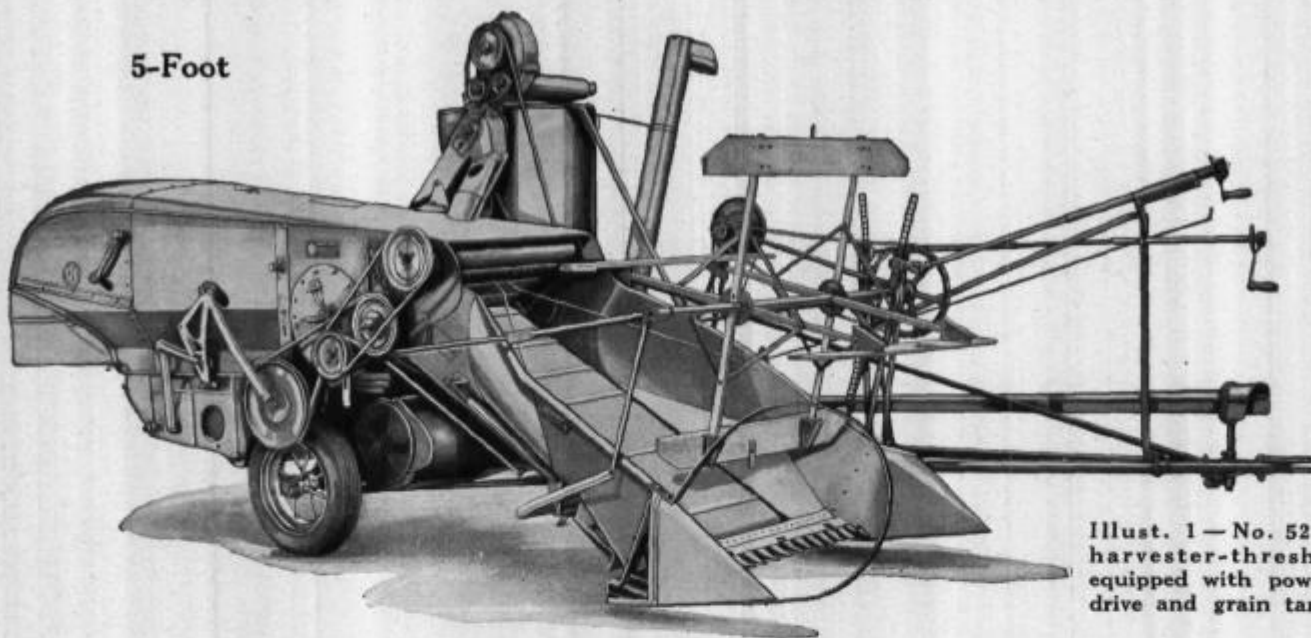
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No. 52-R Harvester-Thresher

5-Foot



Illust. 1 — No. 52-R harvester-thresher equipped with power-drive and grain tank.

The No. 52-R harvester-thresher is an efficiently designed, 5-foot combine built for a diversified farming program. It has all the features essential to good combining found on the larger harvester - threshers. Economical to own and operate, the No. 52-R is especially adapted to small acreages and family-size farms where a variety of grains and threshable seed crops are grown.

Grain-Saving Features

- **Power-Driven Reel** — Fully adjustable for all crop conditions.
- **"Scoop"-Type Platform** — Gets all the crop. Feeds directly to cylinder. Deep sides eliminate loss of fluffy crops on windy days.
- **Full-Width, Rasp-Bar Cylinder** — Threshes all grains and seed crops efficiently.
- **Variable-Speed Control** — Makes it easy to adjust cylinder speed properly for different crops and threshing conditions.
- **Three-Point Separation** — at concave, finger grate, and straw rack. Assures maximum separating capacity and efficiency.
- **Double-Shake Chaffer and Shoe** — Provides efficient cleaning; minimizes vibration.
- **Rubberized Elevator Flights** — Prevent cracking brittle seed crops such as beans and peas.

Regular Equipment

Power-drive machine with sliding propeller shaft, for use with tractors equipped with standardized power take-off, and less power-drive connection and tractor hitch (see list of Power-Drive Connections and Tractor Hitches).

Pneumatic tires: (5.50 x 16-in., 6-ply). Power-driven reel. Choice of 18-bushel grain tank or bagging equipment.

Special Equipment

4-cylinder auxiliary engine and attaching parts. Rotary screen weed seed remover (Scour Kleen) — specify whether for tank or bagger machine. Straw spreader. Pick-up attachment. Platform hydraulic lift — (for Farmalls H, M or MD, as specified). Raised axle attachments. Mud deflector attachment. Tractor hitches and special crop attachments — (see below). Supplemental high outside divider. Auxiliary reel.

Power-Drive Connections and Tractor Hitches (For tractors equipped with standardized power take-off)

ZDA-1465 for tractors with 1 3/8-in. splined take-off shaft.
ZDA-1571 for tractors with 1 1/8-in. splined take-off shaft.
ZDA-1572 for tractors with 1 3/4-in. splined take-off shaft.

Note: Special conversion packages can be obtained for converting tractors equipped with non-standardized power take-off to A.S.A.E. standards. Power-drive hitches as listed above, can then be used with such converted tractors.

Tractor Hitches for Engine-Drive Machines

ZDA-1495 for Farmall A.
ZDA-1496 for Farmall B.
ZDA-1500 for Farmalls H and M.
ZDA-1507 for T-6 and TD-6.

Special tractor hitches available also for older models and other tractors.

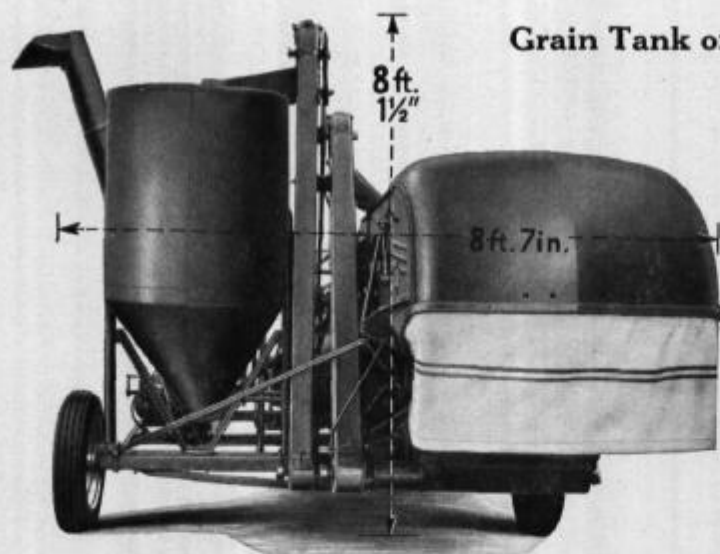
Special Crop Attachments

ZDA-1161 for Alfalfa.
ZDA-1162 for Alsike, Mammoth, Red and Sweet Clovers, and Timothy.
ZDB-1218 for Beans (edible) (with rigid type sheave).
ZDA-1639 for Beans (edible) (with slip clutch type sheave).
ZDA-1163 for Bermuda, Blue, and Carpet Grass.
ZDB-1153 for Crimson Clover.
ZDA-1151 for Flax.
ZDA-1164 for Hop, Ladino, Lappaceum Bur, and White Clovers.
ZDA-1188 for Peas and Vetch.
ZDA-1180 for Red Top Grass.
ZDB-1187 Heading Attachment for Grain Sorghum.
ZDA-1468 Special Parts for threshing Soybeans when grown with corn.

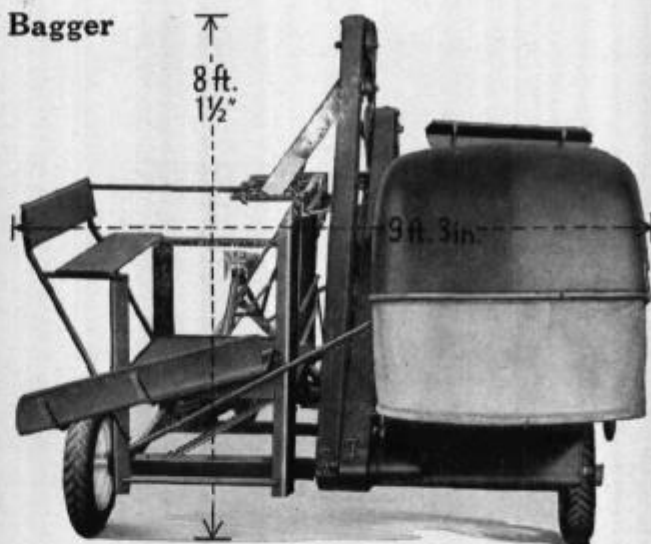


No. 52-R Harvester-Thresher

EQUIPMENT FOR EVERY NEED



Illust. 1 — No. 52-R harvester-thresher with grain tank.



Illust. 2 — No. 52-R harvester-thresher with bagging platform.

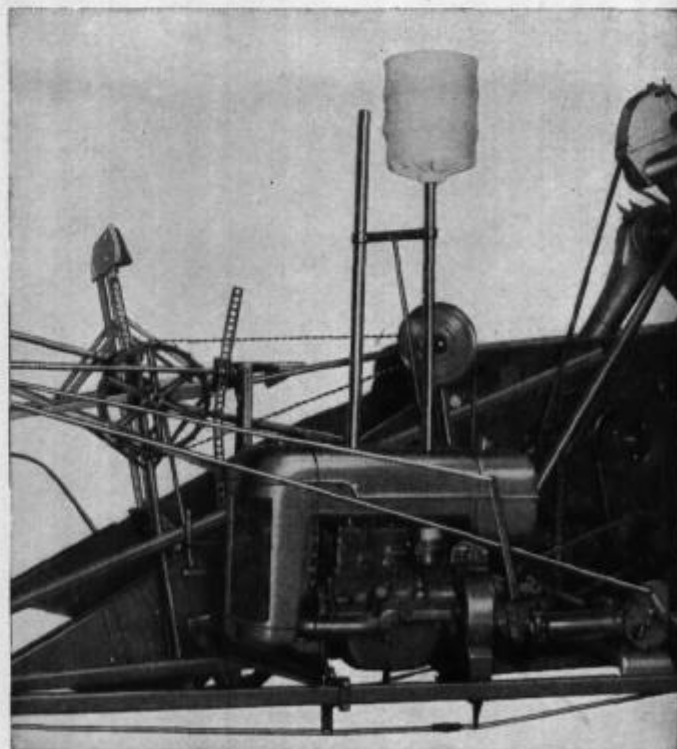
The No. 52-R is built for power-drive operation with tractors such as the Farmall H, M or MD and other tractors of equal or greater horsepower. It can also be supplied with a 4-cylinder auxiliary engine, so that it

may be pulled by smaller tractors. A grain tank or bagging platform are optional equipment. A wide variety of other equipment is available to meet local or special harvesting conditions.

Power-Drive or Auxiliary Engine



Illust. 3 — This shows the sliding propeller shaft and hitch for tractors with standardized power take-off. A, indicates the reel control; B, rod control for unloading tank; C, platform control.



Illust. 4 — The sturdy, 4-cylinder auxiliary engine, supplied on special order, is mounted on the A-frame to provide a direct-in-line drive. The engine clutch control rod extends within easy reach of the tractor driver.



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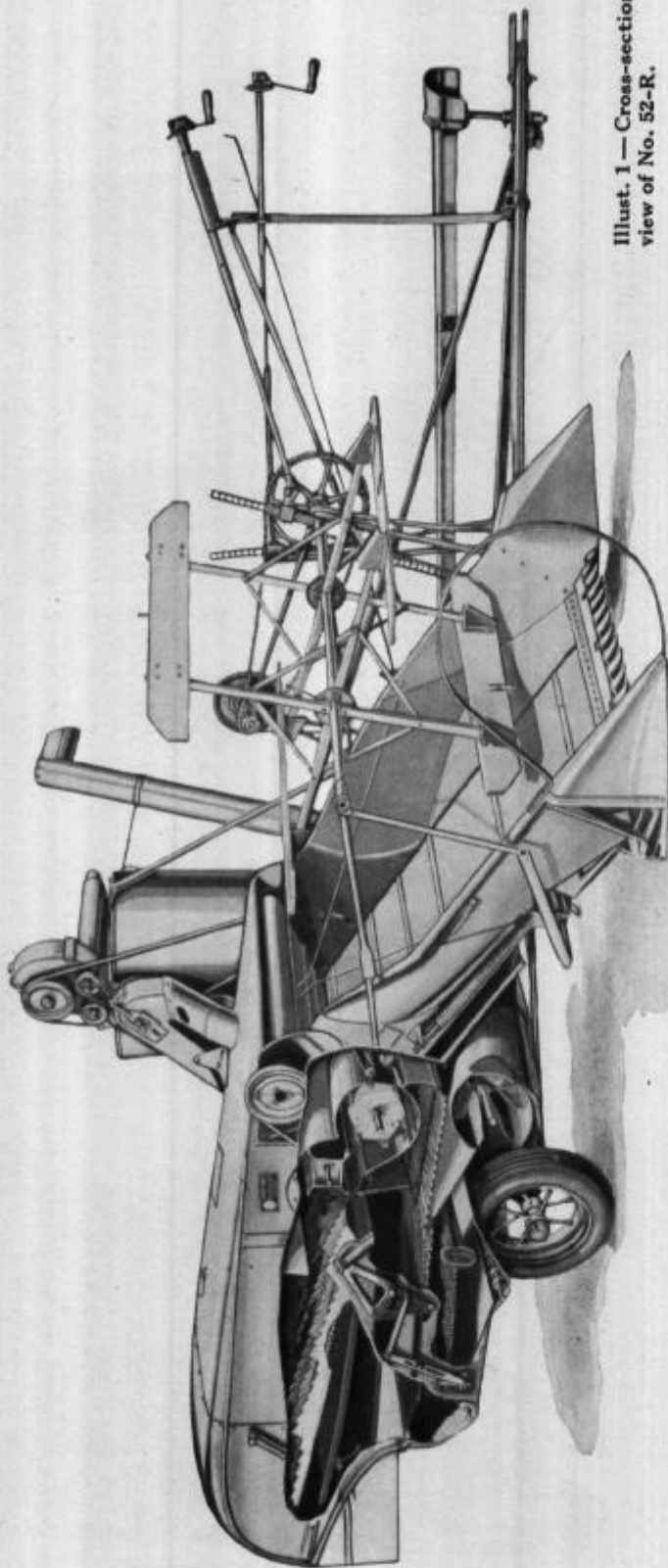


No. 52-R Harvester-Thresher

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Illust. 1 — Cross-sectional view of No. 52-R.

Specifications

Width of cut with gather	5 ft.
Length of cutter bar	4½ ft.
Cutting range	2 in. to 32 in.
Reel:	
Number of bats	4
Type of bats	Adjustable pitch
Type of drive	Power, Regular; Ground, Special
Speeds (Power drive)	22, 29, and 33 R.P.M.
Guards	Straight, 3 in. spaced
Knife speed	404 strokes per min.
Type of platform	Rubberized canvas conveyor
Platform control	{ Manual Lift, Regular
Feeder:	{ Power Lift, Special
Width	36 in.
Width of canvas	34½ in.
Speed of upper drive roller	490 R.P.M.
Speed of lower drive roller	404 R.P.M.
Drive roller	Rubber covered
Cylinder:	
Type	Rasp-bar
Number of bars	6

Cylinder—(Continued)

Diameter	15½ in.
Speed	975 to 1,700 R.P.M.
Sheaves transposed	400 to 680 R.P.M.
Special sheaves	{ 730 to 930 R.P.M.
	{ 285 to 515 R.P.M.
Concave	Steel bars with removable slotted grate
Number of bars	5 channel
Size of grates	¼ x 1 in. slots, Regular
No. of sq. in. of separation (maximum openings)	103.6
Concave finger grate:	
No. of square inches of separation	122
Cylinder beater	4 blade, box type
Diameter	12 in.
Length	35 in.
Speed	589 R.P.M.
No. of check flaps above straw rack	1
Straw rack	One piece, six section, rotary type
Length	57 in.
Width	36 in.
Speed	249 R.P.M.
No. of square inches of separation area	2,052

Cleaning fan	Undershot type, 6-blade
Diameter	14½ in.
Speed	900 to 1,100 R.P.M.
Chaffer	Adjustable fin type
Length	30½ in.
Width	22 in.
Shoe sieve	Adjustable fin type
Length	30½ in.
Width	22 in.
Total cleaning area including chaffer extension	1,559 sq. in.
Grain tank capacity	18 bu.
Tread of main wheels	
(machine with pneumatic tires)	85½ in.
Size of main wheel pneumatic tires	5.50 x 16.00 (6-ply)
Length of machine overall (less spreader)	19 ft. 2 in.
Width overall:	
With grain tank	8 ft. 7 in.
With bagger	9 ft. 3 in.
Extreme height (mach. with pneumatic tires)	8 ft. 1½ in.
Approximate weight:	
With grain tank (power-drive)	*2,288 lb.
With bagger (power drive)	*2,191 lb.
For engine-drive machines add to above	*540 lb.
*All weights approximate.	

No. 52-R Harvester-Thresher

Saves Grain and Seed at Cutter Bar

1. Wide range of cutter bar and reel adjustments for all harvesting conditions.
2. Reel bats adjustable to suit crop conditions.
3. Power-driven reel places grain evenly on apron feeder.

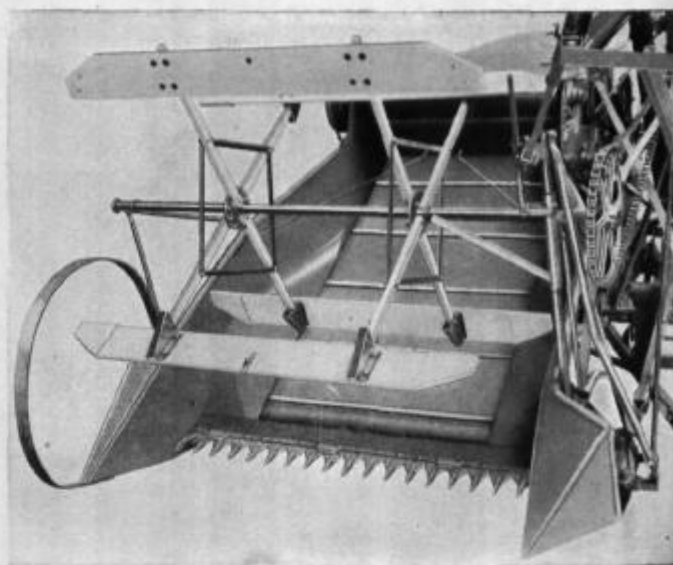
Power-Driven Reel

The power-driven reel operates at a uniform speed, independent of the forward travel of the machine. This assures proper placement of the cut grain on the feeder apron at all times.

The pitch of the reel bats is adjustable. They can be "cammed" by setting the bats away from the arms, thus providing a more aggressive action for feeding short grain and to prevent "repeating" in extremely tall grain. The bats may also be set in a more radial position to prevent loss ahead of the cutter bar in grain that is easily shattered. Each bat has a "hairpin" at the center which assists in feeding tall and heavy crops.

Direct Feed to Cylinder

The cut grain falls directly onto the feed apron which conveys it to the cylinder. Steady, even feeding is assured by a short upper apron which automatically

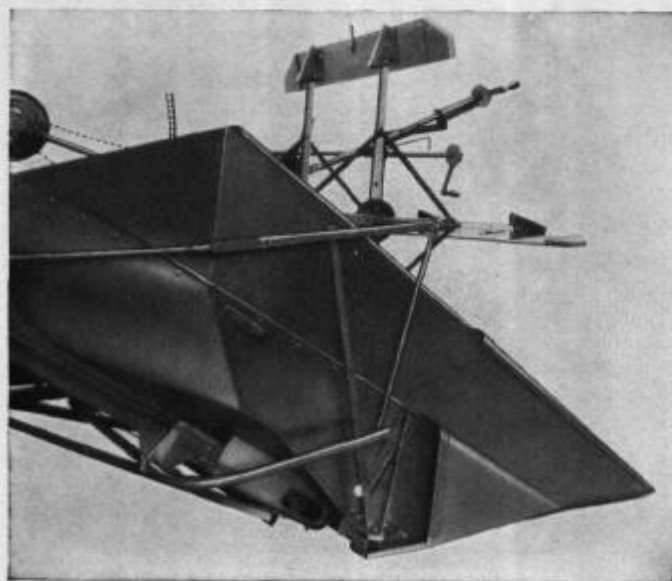


Illust. 1 — Front view of header showing the power-driven reel. The cut grain falls directly upon the feeder canvas and is conveyed to the cylinder.

adjusts itself to the volume of grain on the feeder and combs it evenly into the cylinder. Teeth in the apron slats further aid in maintaining uniform feed.

Convenient Controls

Convenient crank controls enable the operator to adjust the cutting height and regulate the reel quickly and easily from the tractor seat. On tank machines the operator also controls the operation of the unloading auger from the tractor seat.

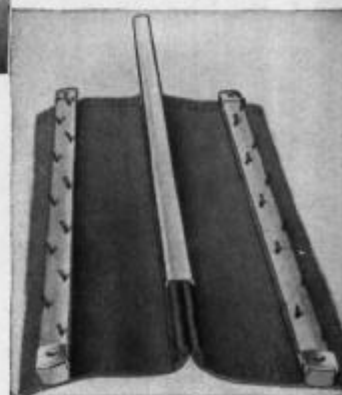


Illust. 2 — A high outside divider is special equipment. It aids materially in harvesting viny crops and prevents light, fluffy crops from being blown about.



Illust. 3 — Springs on both sides hold the upper feeder apron to its work and automatically adjust it to the volume of material on the conveyor.

Illust. 4 — The ends of the feeder aprons are held together by steel couplers which facilitate assembly or removal and provide a smooth, grain-tight joint. ➔



No. 52-R Harvester-Thresher

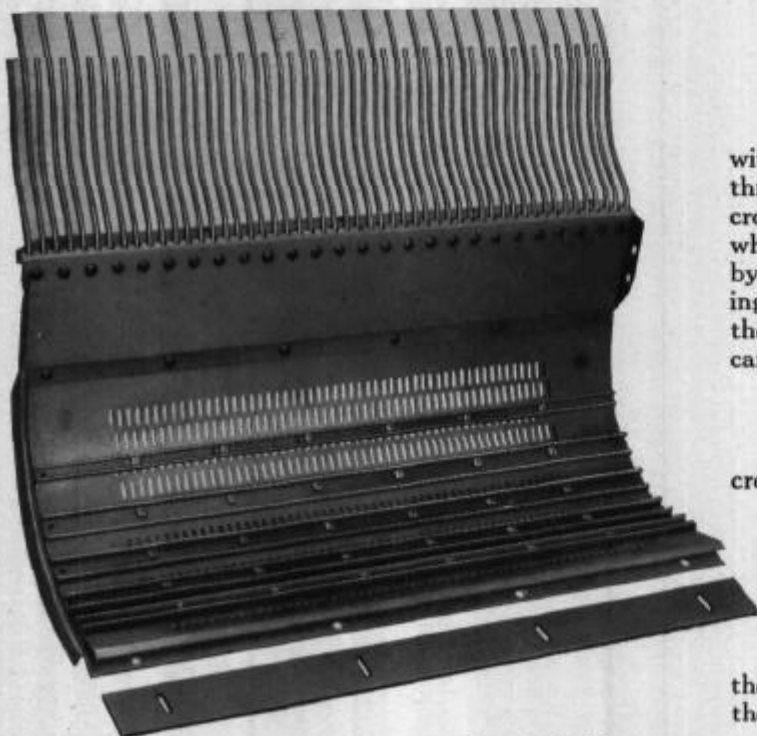
Saves Grain and Seed at Cylinder, Concave and Finger Grate

1. Full-width, rasp-bar cylinder with variable-speed control assures clean threshing.
2. Number of concave channel bars can be varied to suit crop and threshing condition.
3. Grain separated at concave and grate falls directly onto grain-pan — cannot remix with straw.
4. Prompt separation at concave and grate avoids overburdening straw rack.

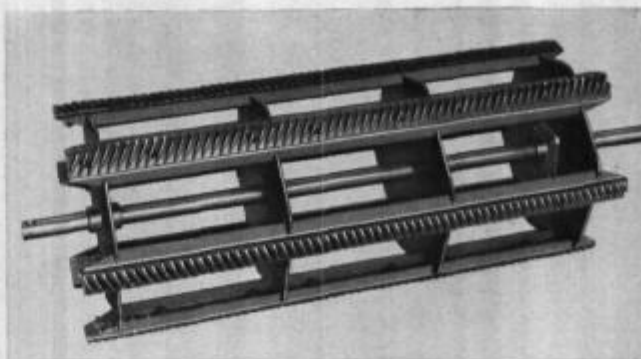
Rasp-Bar Cylinder

The full-width, rasp-bar cylinder rubs the grain or seed from the heads without chewing up the straw. This makes for easier, more efficient separation and reduces the likelihood of green weed particles being mixed with the cleaned grain. The full-width feature permits a large, even flow of material without clogging.

The threshing capacity is greatly increased by the use of a feed plate over which all material passes into the cylinder. The feed plate provides an extra edge where much of the threshing action ordinarily takes place.



Illust. 3 — Concave and grate assembly with shelling plate in foreground. The channel bars are individually removable to suit various threshing conditions.



Illust. 1 — The cylinder is comprised of six heavy steel bars, alternately corrugated to direct the flow of material. The cylinder extends across the full width of the machine.



Illust. 2—Variable-speed control for cylinder. A, is hand screw for changing sheave diameter. B, is crank for adjusting belt tension.

Variable-Speed Control

A wide variation of cylinder speeds is obtainable with the variable-speed control. This makes it easy to thresh at exactly the right speed for each particular crop and to suit weather conditions. Variations anywhere from 975 r.p.m. to 1,700 r.p.m. can be obtained by merely turning a hand screw and crank. By reversing or changing the sheaves on the cylinder shaft and the countershaft a range of 680 r.p.m. down to 400 r.p.m. can be obtained.

Concave and Finger Grate

The concave consists of a curved steel plate with cross channel bars where the threshing takes place. Between the bars are perforated openings and at the rear of the concave is the finger grate consisting of a series of steel rods. As the grain is threshed it falls through the concave openings and finger grate onto the grain pan below.

Thus a large part of the grain is separated from the straw before it reaches the straw rack—speeding up the work and making for greater all-over efficiency.

The concave channel bars are removable so that the correct number can be used to suit the particular crop and threshing condition.



No. 52-R Harvester-Thresher

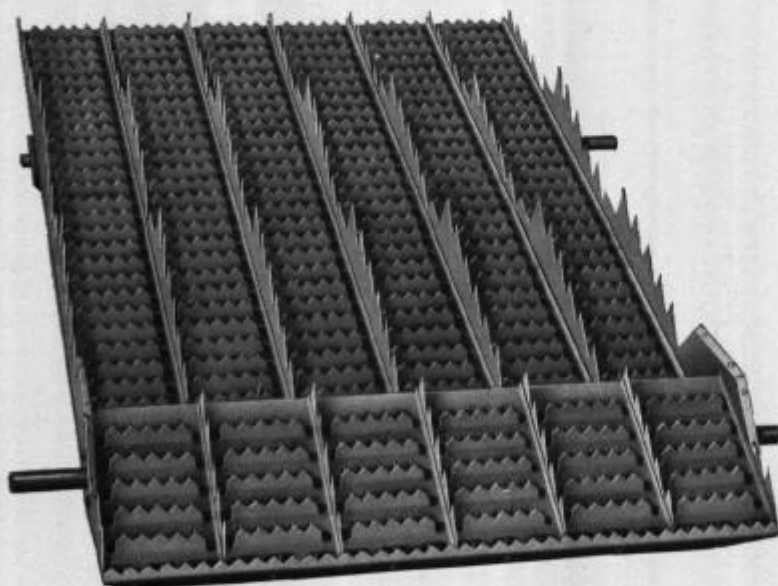
Saves Grain and Seed at Straw Rack and Grain Pan

1. Design of all-steel straw rack provides maximum area of openings for fast, effective separation.
2. Vigorous rocking motion assures separation of remaining grain or seed from straw.
3. Steel fishbacks help to comb the straw apart and release the kernels.
4. Adjustable check-flap prevents loss of flying kernels.
5. Grain pan fingers float out coarse chaff and prevent congesting chaffer.

An adjustable check flap above the straw rack deflects any flying kernels and prevents them from being lost out of the rear of the machine.

Full-Length Grain Pan

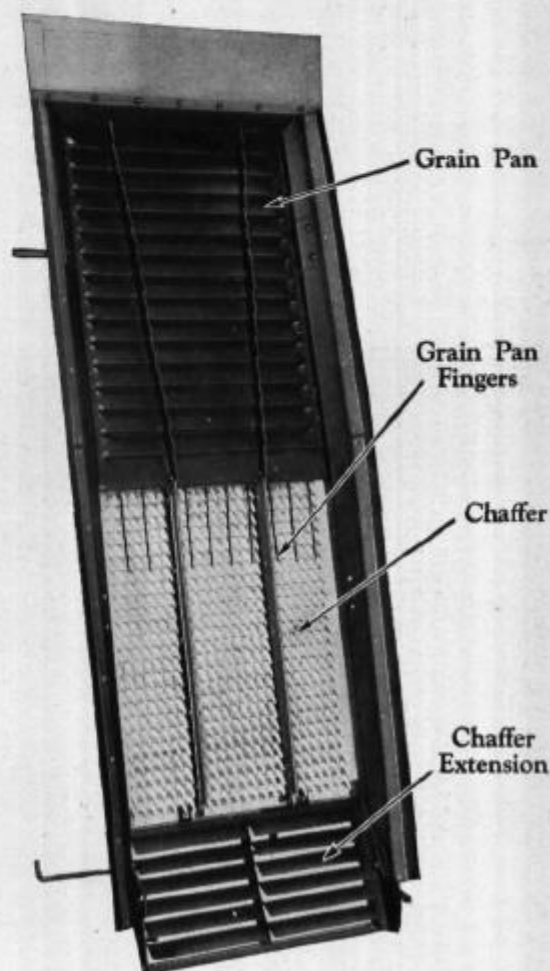
The full-length grain pan receives the grain, chaff and unthreshed heads which have dropped through the concave openings and also that material which has dropped through the straw rack onto the return pan. As the grain pan moves back and forth it conveys this material, a step at a time, toward the grain pan fingers extending over the chaffer. These fingers have an important part in the separation process, helping to float out coarse chaff from the grain and thus prevent congestion on the front part of the chaffer sieve. These fingers also enable the air blast to exert a maximum effect, separating the grain from the chaff as soon as the grain leaves the grain pan.



Illust. 1 — All-steel straw rack as viewed from the front. Note the steel fishbacks and risers.

Big-Capacity Steel Straw Rack

The all-steel construction of the straw rack assures a maximum effective area of openings for the remaining grain or seed to fall through as it is sifted out of the straw. The rack is given a vigorous rocking motion which loosens and shakes up the mass of straw coming from the cylinder. Full-length fishbacks with risers act as combs to further loosen the straw and release the kernels so that they may fall through the straw rack openings onto the return pan. From here they are delivered to the front end of the chaffer for cleaning.



Illust. 2 — The grain pan, chaffer, and chaffer extension are built into one frame and oscillate in unison.



No. 52-R Harvester-Thresher

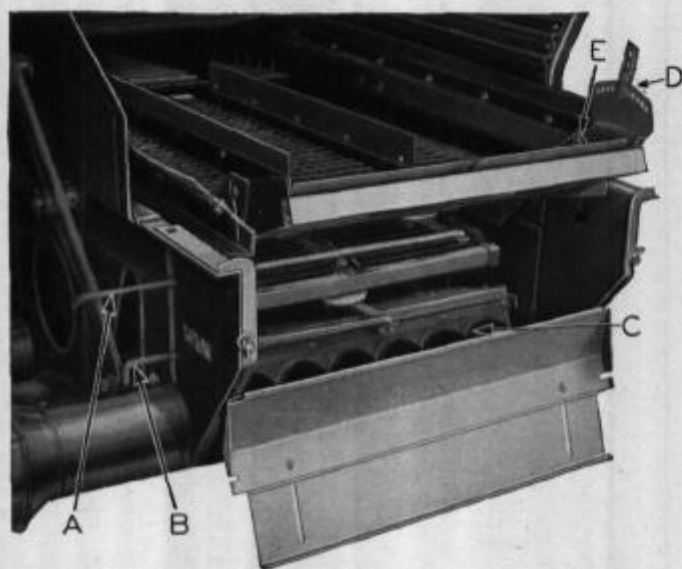


Illust. 1 — Cleaning shoe showing the adjustable fin-type sieve. The openings are adjustable for saving all grains and seeds.

Double Cleaning Action

Grain or seed threshed by the No. 52-R combine is cleaned first by the chaffer and then in the cleaning shoe. These two units operate independently of and in opposition to each other, thus providing a counter-balanced action which results in better cleaning and also avoids machine vibration.

Both the chaffer and shoe sieve are the adjustable, fin type. The function of the chaffer is to separate the grain or seed from the chaff and coarser refuse which then pass onto the chaffer extension. The grain and smaller particles not removed by the air blast meanwhile fall through the chaffer onto the cleaning sieve below.



Illust. 2 — Ample adjustments are provided for cleaning and saving the grain. A, indicates rod for adjusting chaffer. B, shoe sieve adjusting rod. C, tailings auger. D, lever for regulating chaffer extension shutters. E, chaffer extension height adjustment.

Saves Grain and Seed at Chaffer, Chaffer Extension and Shoe

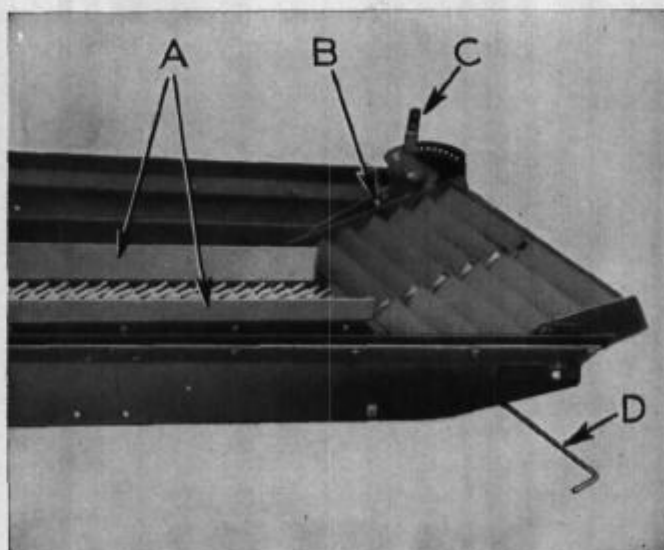
1. Adjustable fins assure openings of proper size.
2. Grain pan fingers float out coarse chaff from the grain.
3. Grain dividers prevent congestion of grain.
4. Adjustable chaffer extension can be raised to retard flow.
5. Double-shake action assures thorough cleaning of grain.

Adjustable Chaffer Extension

The shutter-type chaffer extension is fully adjustable to meet all crop and threshing conditions. It can be raised or lowered at the rear and the shutters can be fully closed or opened to the required degree best suited for saving the tailings.

Cleaning Shoe

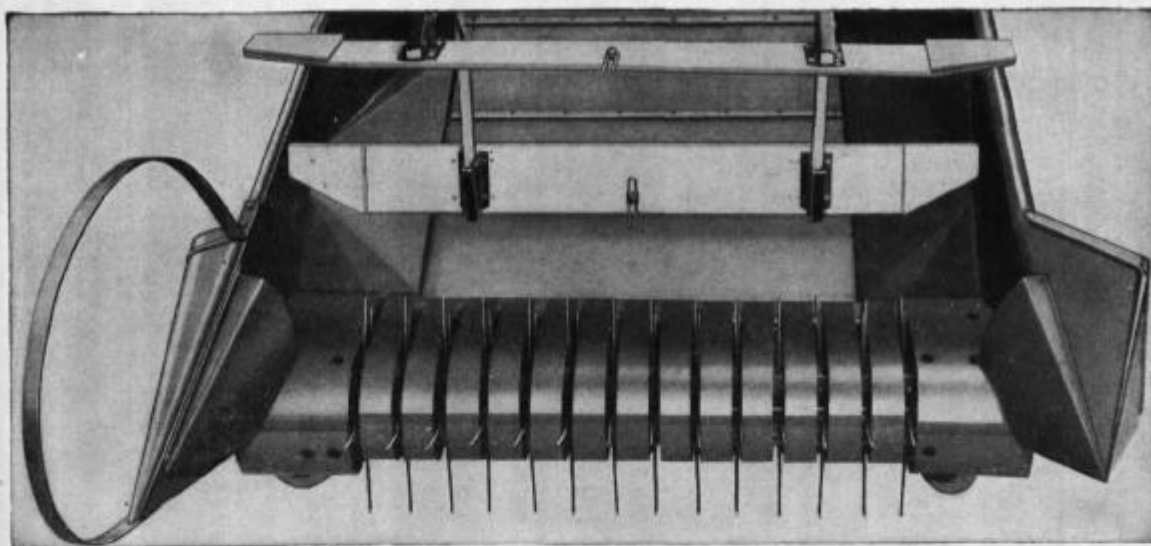
The cleaning sieve provides a second cleaning of the grain under air blast. This sieve has smaller openings than the chaffer and can be regulated to a finer degree. Where conditions necessitate a second (round hole) sieve can be used underneath the adjustable top sieve.



Illust. 3 — Rear end of chaffer with chaffer extension. A, indicates steel dividers which tend to level flow of grain when working on side hills. B, chaffer extension height adjustment. C, lever for regulating shutter openings. D, chaffer adjusting rod.



No. 52-R Harvester-Thresher

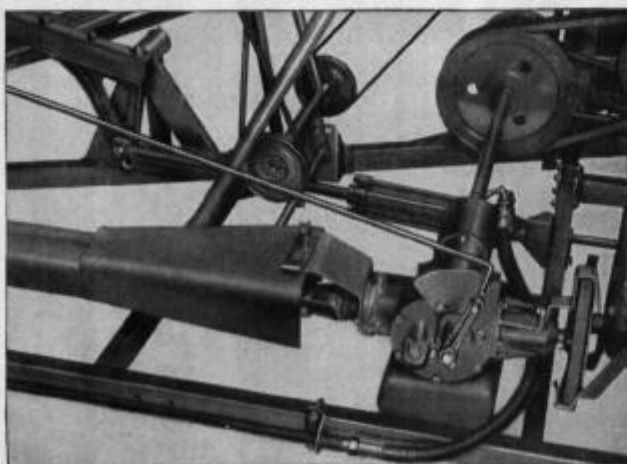


Illust. 1 — A pick-up attachment for gathering windrowed crops is available on special order. The rotating drum with fingers is power-operated, assuring uniform speed at all times.

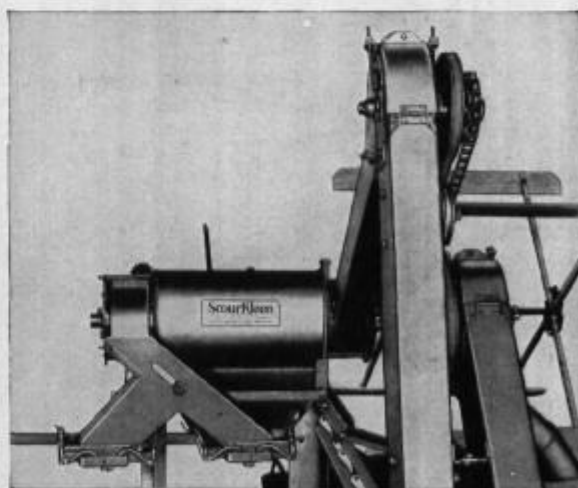


Illust. 2 — A wide variety of special crop attachments is available. Shown here is the No. 52-R with reel end guard which is part of the Soybean Attachment.

Illust. 4 — The straw spreader attachment is available as extra equipment for more uniform distribution of straw.



Illust. 3 — Hydraulic platform power-lift attachment for raising and lowering the header platform by hydraulic power. This attachment is used only in conjunction with Farmall H, M, and MD tractors equipped with "Lift-All."

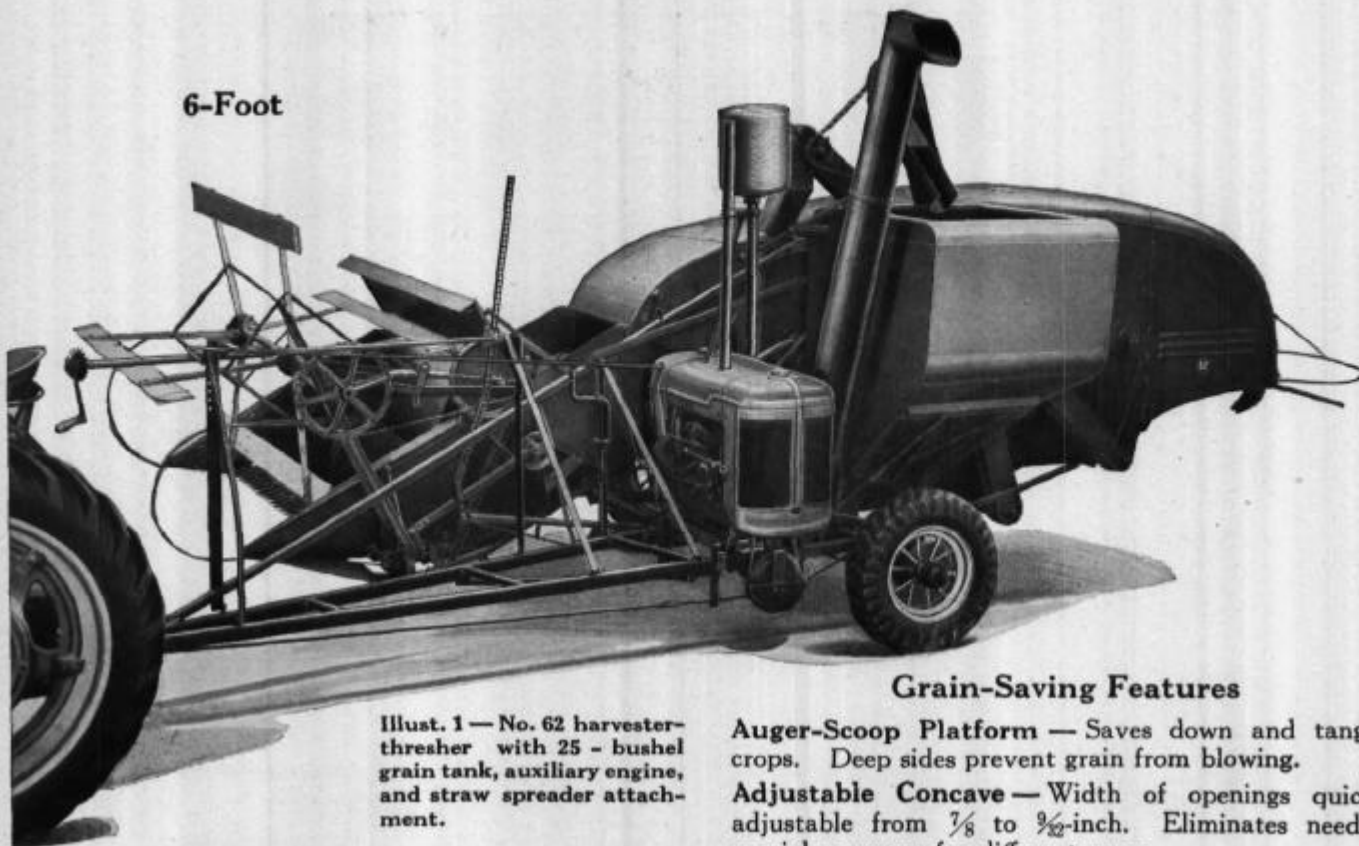


Illust. 5 — Weed seed remover (ScourKleen) attachment for use in extremely weedy crops. A rotary screen removes the small weed seeds from the grain and delivers them separately into a bag. The attachment can be supplied for either tank machines or bagger machines (as shown).



No. 62 Harvester-Thresher

6-Foot



Illust. 1 — No. 62 harvester-thresher with 25 - bushel grain tank, auxiliary engine, and straw spreader attachment.

The No. 62 is a full 6-foot cut machine designed for harvesting all grains and seed crops. Its low original cost; ability to handle all threshable crops; modern, straight-line design; light weight and low power requirements make it an outstanding value for the smaller operator. From the feeder, augmented by a short open-end auger, the grain is handled in a straight line through the machine. This prevents piling or clogging and assures extra capacity for heavy crops.

The No. 62 is regularly supplied as a power-drive machine for operation with tractors such as Farmalls H and M and others of equal or greater power. It can be supplied also as an engine-drive machine permitting use with smaller tractors.

Grain-Saving Features

Auger-Scoop Platform — Saves down and tangled crops. Deep sides prevent grain from blowing.

Adjustable Concave — Width of openings quickly adjustable from $\frac{1}{8}$ to $\frac{3}{16}$ -inch. Eliminates need of special concaves for different crops.

Variable-Speed Control — Hand wheel adjustments for changing cylinder speed for different crops and threshing conditions. Normal range 585 to 1,700 r.p.m.

Three-Point Separation — at chaffer, finger grate, and straw rack. Highly efficient; assures reserve capacity for peak loads.

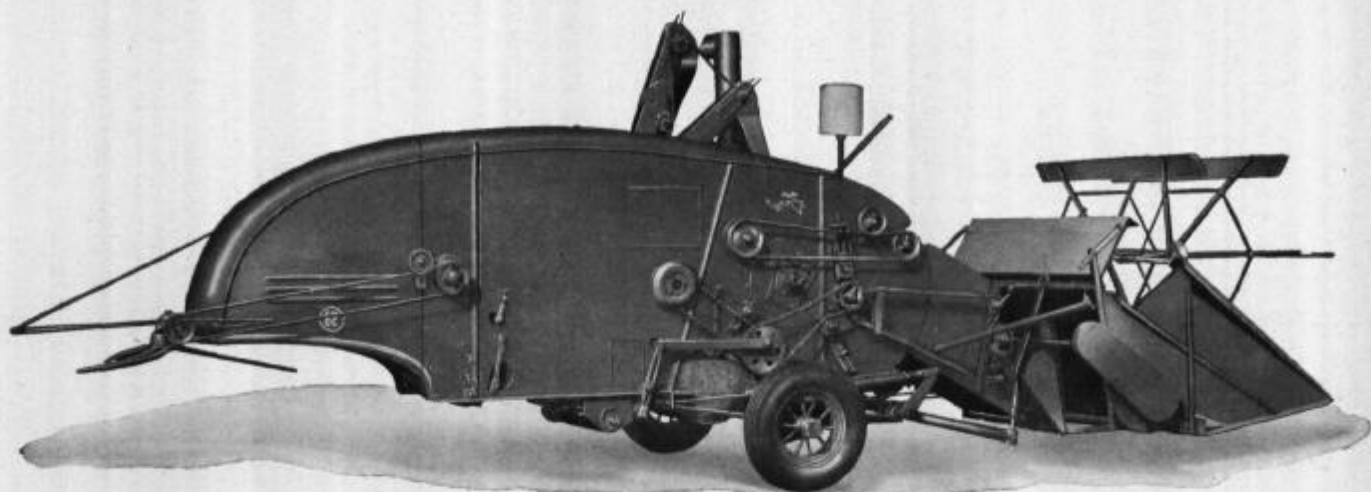
Double Cleaning — provided by chaffer and cleaning shoe. Double shake minimizes vibration.



Illust. 2 — No. 62 harvester-thresher with bagger, power drive, standardized tractor hitch, and straw spreader attachment.



No. 62 Harvester-Thresher



Illust. 1 — Right side view of No. 62 harvester-thresher equipped with engine, special 6-bat reel, supplemental outside divider, straw spreader, and rubber flax roll attachment.

Regular Equipment

Pneumatic-tires (7.50 x 16-inch, 8-ply). Power-driven reel. Choice of 25-bushel grain tank or bagging platform. Variable-speed cylinder control. Rasp bar cylinder. Adjustable concave.

Power-drive machine with sliding propeller shaft, for use with tractors equipped with standardized power take-off, and less power-drive connection and tractor hitch (see list of Power-Drive Connections and Tractor Hitches).

Special Equipment

4-cylinder auxiliary engine and attaching parts. Scour-Kleen weed seed remover (specify tank or bagger machine). Straw spreader. Pickup attachment. Main wheels with 7.50 x 24-inch tires. Dual rims and tires (7.50 x 16-inch, 8-ply). Tandem wheel attachments. Supplemental outside divider. Auger trough shield. Platform hydraulic lift (for use with Farmalls H or M, as specified). Platform pneumatic lift (for use with Farmalls A, B and BN). Adjustable reel attachments. Ground drive reel. Outer reel support. Extra heavy cutting attachments. 32-in. diameter reel (for use with pick-up). Flax rubber roll attachment. Grain sorghum heading attachment. Grain lifters.

Special Crop Attachments

ZDA-1299 for Alfalfa.
ZDB-1285 for Beans (edible).
ZDA-1297 for Bermuda, Blue Carpet and Orchard Grass.
ZDA-1621 for Brome Grass.
ZDA-1295 for Crimson Clover.
ZDB-1296 for Clovers (Alsike, Ladino, Hop, Lappaceum, White, and White Dutch).

ZDA-1298 for Timothy and Clovers (Bur, Red, Sweet, and Mammoth).

ZDB-1269 for Flax.

ZDA-1287 for Lespedeza.

ZDA-1292 for Red Top Grass.

ZDB-1447 for Soybeans.

ZDA-1620 for Grain Sorghums.

ZDA-1445 Special parts for harvesting soybeans grown with corn.

Power Drive Connections and Tractor Hitches

(for tractors equipped with standardized power take-off)

ZDA-1465 for tractors with $1\frac{3}{8}$ -in. splined take-off shaft.

ZDA-1571 for tractors with $1\frac{1}{8}$ -in. splined take-off shaft.

ZDA-1572 for tractors with $1\frac{3}{4}$ -in. splined take-off shaft.

Note: Special conversion packages can be obtained for converting tractors equipped with non-standardized power take-off to A.S.A.E. standards. Power-drive hitches as listed above, can then be used with such converted tractors.



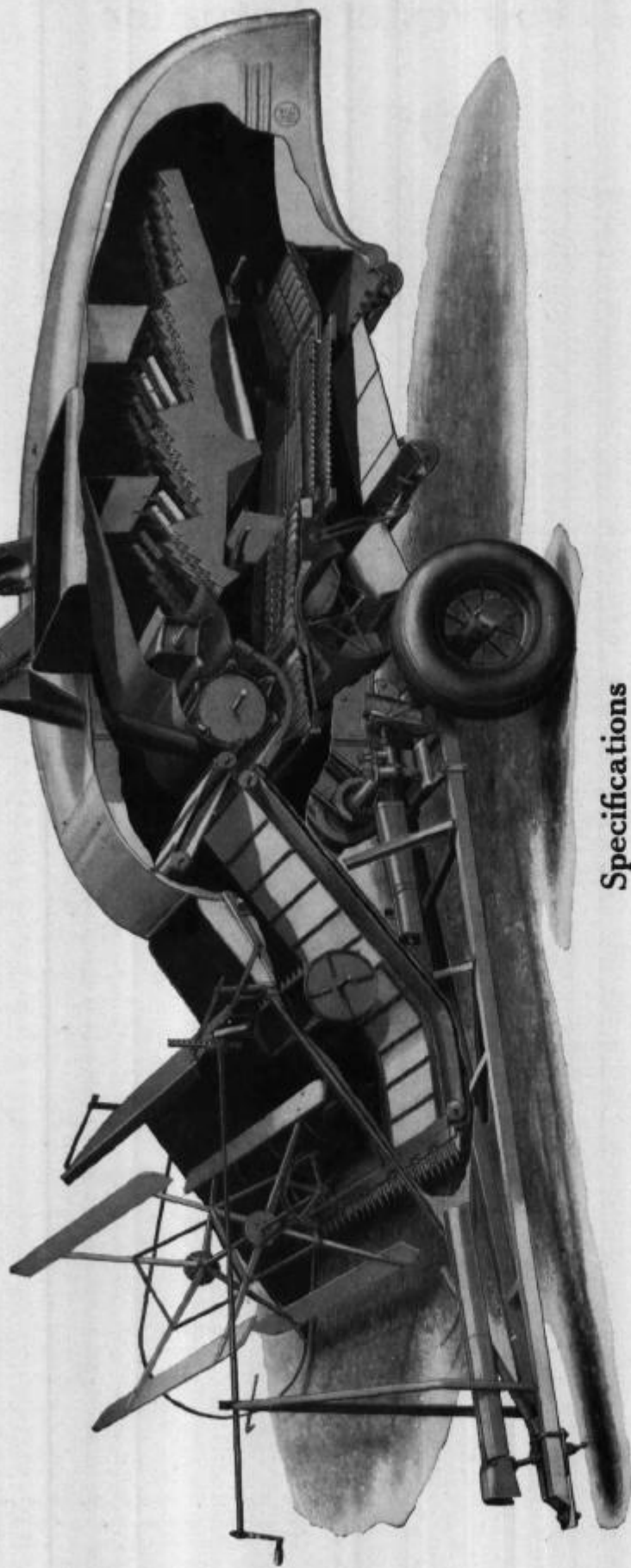
Illust. 2 — No. 62 harvester-thresher equipped with special pickup attachment for gathering windrowed crops. The pickup is equipped with either power drive or ground drive, as ordered.





No. 62 Harvester Thresher

Illust. 1 — Cross-sectional view of No. 62 harvester-thresher.



Specifications

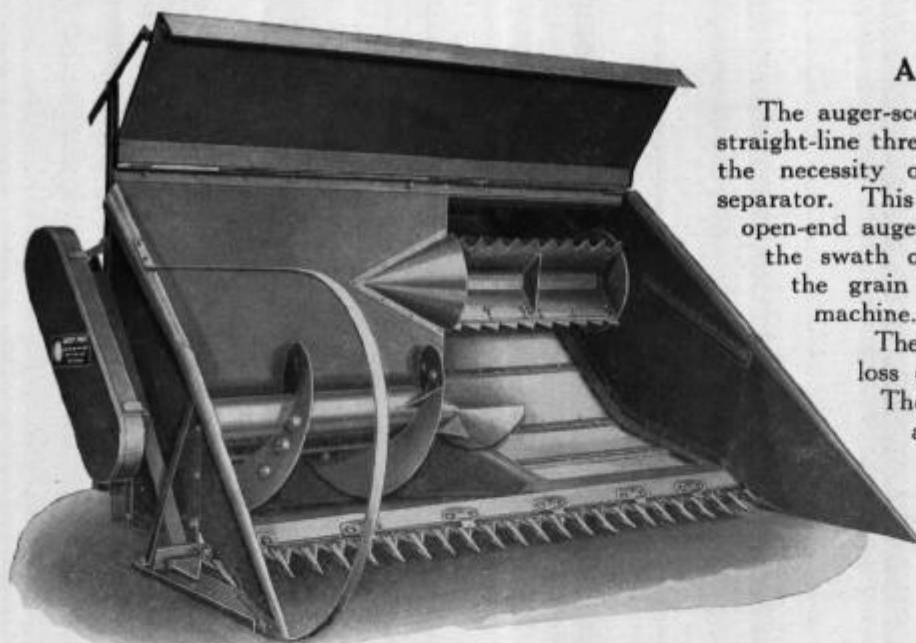
Width of cut with gather.....	6 ft. 2 1/2 in.
Length of cutter bar.....	6 ft.
Cutting range.....	2 to 32 in.
Reel.....	{ Power drive, 4 bat (Regular) Ground drive, 4 bat (Special)
Speeds.....	{ 32 r.p.m. (Regular) 36 and 24 r.p.m. (Special)
Platform auger:	
Length.....	45 in.
Diameter.....	16 in.
Speed.....	312 r.p.m.
Width of feeder.....	27 1/2 in.
Cylinder, rasp-bar type.....	6 bars
Length.....	28 in.
Diameter.....	16 in.
Speed, variable.....	585 to 1700 r.p.m.
Concave.....	Adjustable type
Openings adjustable from.....	1/4 x 1 in. to 9/16 x 1 in.

Concave—(continued)	
Number of bars.....	2 flat, 4 channel
Maximum size openings for separation.....	7/8 x 1 in.
Minimum size openings for separation.....	9/16 x 1 in.
No. sq. in. of separation (max. openings).....	70
Concave finger grate.....	Hinged, can be raised or lowered
No. sq. in. of separation space.....	128
Straw rack.....	Three-section, rotary type
Length.....	78 1/2 in.
Width.....	28 in.
Speed.....	226 r.p.m.
No. sq. in. of separation area.....	2,198
Cleaning fan.....	Undershot type
Diameter.....	18 5/8 in.
Speed.....	{ Regular 766 r.p.m. Special 633 r.p.m.
Chaffer.....	Adjustable fin type
Length.....	34 3/4 in.
Width.....	25 5/8 in.

Shoe sieve.....	Adjustable fin type
Length.....	34 3/4 in.
Width.....	26 in.
Total cleaning area including chaffer extension.....	2154 sq. in.
Grain tank capacity.....	25 bu.
Tread of main wheels (with regular pneumatic tires).....	84 7/8 in.
Size of main wheel pneumatic tires (regular).....	7.50 x 16 in.
Length of machine overall (less spreader).....	20 ft.
Width overall (grain tank machine).....	11 ft. 1 1/2 in.
Width overall (bagger machine).....	11 ft. 10 1/2 in.
Extreme height.....	9 ft. 3 in.
Approximate weight (regular equip.).....	3,100 lb.
Engine:	
Bore.....	Continental
Stroke.....	2 1/2 in.
Governed speed.....	3 1/2 in.
	2,000 r.p.m.



No. 62 Harvester-Thresher



Illust. 1 — Front view of header with reel removed showing the open-end auger which deflects the outer portion of the swath onto the feeder canvas. The one-piece auger will give extremely long service.

Concave Adjustable for Different Crops

The No. 62 is regularly equipped with an adjustable concave which permits threshing grain and seeds of large or small size without removing and replacing the concave. This feature simplifies adjusting the machine from one crop to another and makes it unnecessary to buy extra concaves. Adjustments are made by means of two adjusting screws underneath the front end of the concave. The size of openings are adjustable from $\frac{7}{8} \times 1$ in. to $\frac{9}{32} \times 1$ in.



Illust. 2 — Under side of concave showing the movable plate which can be adjusted to regulate the size of concave openings. Note the two adjusting screws at each end.

Auger-Scoop Header

The auger-scoop header offers all the advantages of straight-line threshing in a 6-foot-cut machine without the necessity of having a disproportionately wide separator. This is made possible by the use of a short open-end auger which deflects the outer portion of the swath onto the feeder canvas. From here the grain moves in a straight line through the machine.

The enclosed sides of the header prevent loss of light, fluffy crops on windy days. The platform top shield is adjustable for added protection. The feed conveyor is made of heavy rubberized canvas. The ends of the canvas are joined by means of a hinge and coupler rod.

Illust. 3 — Variable-speed control as set for fast cylinder speed. Pulley diameters are varied by adjusting the hand wheels.



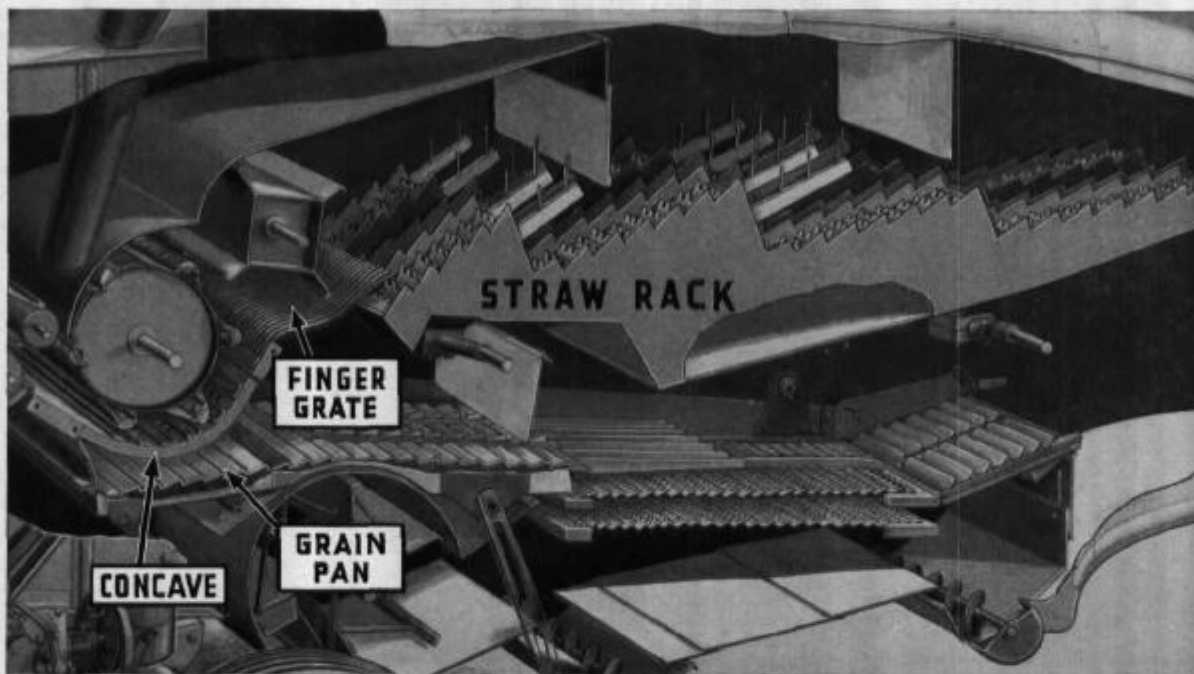
Variable-Speed Cylinder Control

The efficiency of threshing depends largely on the cylinder speed. This will vary with the condition of grain and the variety of crop being threshed. With the variable-speed device on the No. 62 harvester-thresher the operator can quickly and accurately adjust the cylinder speed to any desired setting from 1,700 down to 585 r.p.m. This permits threshing a great variety of crops from staple grains to seeds such as beans, peas, flax, clover, alfalfa and many kinds of grasses without the need of extensive changes in pulley equipment.

The cylinder is driven by a V-belt operating over adjustable sheaves. The working diameter of the sheaves can be altered by adjusting a hand wheel on each sheave. This permits quick and extremely accurate speed settings to suit the particular variety and condition of crop being threshed.



No. 62 Harvester-Thresher



Illust. 1 — Cross-section of separator interior indicating the three points where separation takes place — at concave, finger grate, and straw rack. Note full-length grain pan extending underneath the concave.

Efficient, Three-Point Separation

There are three places where threshed grain (or seed) is separated from the straw:

- At the concave.
- At the finger grate.
- At the straw rack.

This results in fast, efficient separation made possible because:

- The grain pan extends all the way underneath the concave, receiving the grain separated at this point and delivering it direct to the chaffer.
- The concave has a large number of openings through which the grain can fall to the grain pan.
- The adjustable finger grate, with its series of curved steel fingers, offers an additional large area through which the grain can fall into the grain pan.

Under normal conditions the greater portion of separation takes place before the material reaches the straw rack. This avoids overburdening the rack — provides a large reserve capacity for peak loads and adverse conditions, and minimizes the possibility of grain being lost from the rear of the machine.

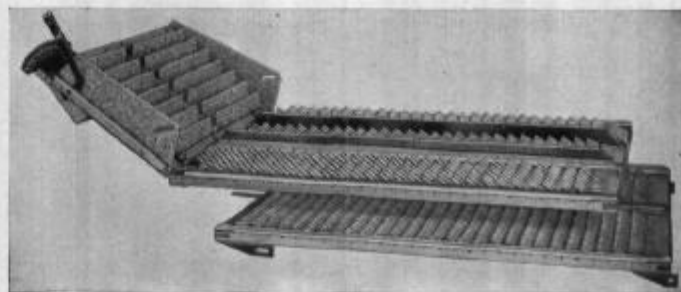
Double Cleaning at Chaffer and Shoe

The grain, separated from the straw but still chaff-laden, is given a double cleaning — first, at the chaffer

and, secondly, at the cleaning shoe. Both the chaffer and cleaning shoe sieve are adjustable fin-type through which the grain passes while being subjected to an air blast from the fan. The cleaning shoe is mounted directly beneath the chaffer so that it receives the grain as it falls through the chaffer. Chaffer and shoe move in opposite directions providing more effective cleaning and minimizing vibration.

Adjustable Chaffer Extension

A shutter-type chaffer extension is provided. It is hinged to the rear of the chaffer and can be raised or lowered to regulate the passage of material. The openings formed by the shutters are adjustable for saving the tailings and floating out the coarser particles of weeds and straw.



Illust. 2 — This shows the chaffer and extension at end of rearward movement while shoe sieve is at end of forward movement. The relative position will be reversed on next stroke of rocker arm.



No. 122 Harvester-Thresher

12-Foot Engine-Operated

Illust. 1 — The No. 122 harvester-thresher offers many valuable features that are new to a 12-foot, pull-type combine.

- One-Man Operation from Tractor Seat.
- Enclosed Platform with Hydraulic-Lift Control.
- Variable-Speed Cylinder and Adjustable Concave.
- 6-Cylinder Engine with Self-Starter.
- Open-End Auger and Undershot Conveyor Feed.
- Platform Readily Removed for Transport.

The No. 122 offers new features, new values and economy in a 12-foot harvester-thresher. Designed for one-man operation from the tractor seat, it meets the requirements of large-scale operators who wish to harvest their crops quickly and with a minimum of manpower. A touch on the control lever raises and lowers the platform without manual effort.

All of the work of lifting is done by a hydraulic system. It is operated by either the hydraulic Lift-All on the tractor or by a hydraulic pump unit on the combine. Hoses and attaching parts are available only for use with Farmall-H, M, or MD tractors equipped with the Lift-All. For operation with all other tractors, the hydraulic pump unit mounted on the combine is required. This unit is actuated from the chaffer fan shaft by means of a drive coupling.

Regular Equipment

Choice of 50-bushel grain tank or bagger. Pneumatic tires (9.00 x 36-in. 12-ply on left side; 7.50 x 36-in. 8-ply on right side). 6-cylinder engine with self-starter. Rasp-

bar cylinder with variable-speed control. Adjustable, slotted-grate concave. Elevator chains with composition flights. Power-driven, variable-speed reel (54-inch diameter). Hydraulic platform lift.

Special Equipment

Transport truck attachment. Pickup attachment. Straw spreader. Wire-grate concave. Supplemental outside divider sheet. Flax roll attachment. Retarder attachment. ScourKleen weed seed remover. Grain sorghum heading attachment. Grain lifters. Platform auger trough top shield. Platform auger bottom shields. Elevator auger trough shield. Wire screen covers for straw rack, front and rear sections. Parts to convert regular reel to small diameter (44-in.) reel. Reel (32-in. diameter) for use with pickup. Reel bat flaps. Reel bats with extensions (rubber belting). Reel end guards. Feeder check flap. Notched angle cylinder bars. Cylinder wood filler bars. Concave cover sheet. Special shoe sieves and shoe bottom screens.

Special Crop Attachments

- ZDA-1583 for Alfalfa.
- ZDA-1590 for Bermuda, Blue, Carpet and Orchard grasses.
- ZDA-1584 for Clovers (Alsike, Hop, Ladino, Lappaceum and White).
- ZDA-1582 for Timothy and Clovers (Red, Sweet, Mammoth and Bur).
- ZDA-1596 for Beans (edible).
- ZDA-1585 for Flax.
- ZDA-1591 for Lespedeza.
- ZDA-1418 for Red Top Grass.
- ZDA-1645 for Soybeans (use with regular reel).
- ZDA-1646 for Soybeans (use with small 44-in. dia. reel).

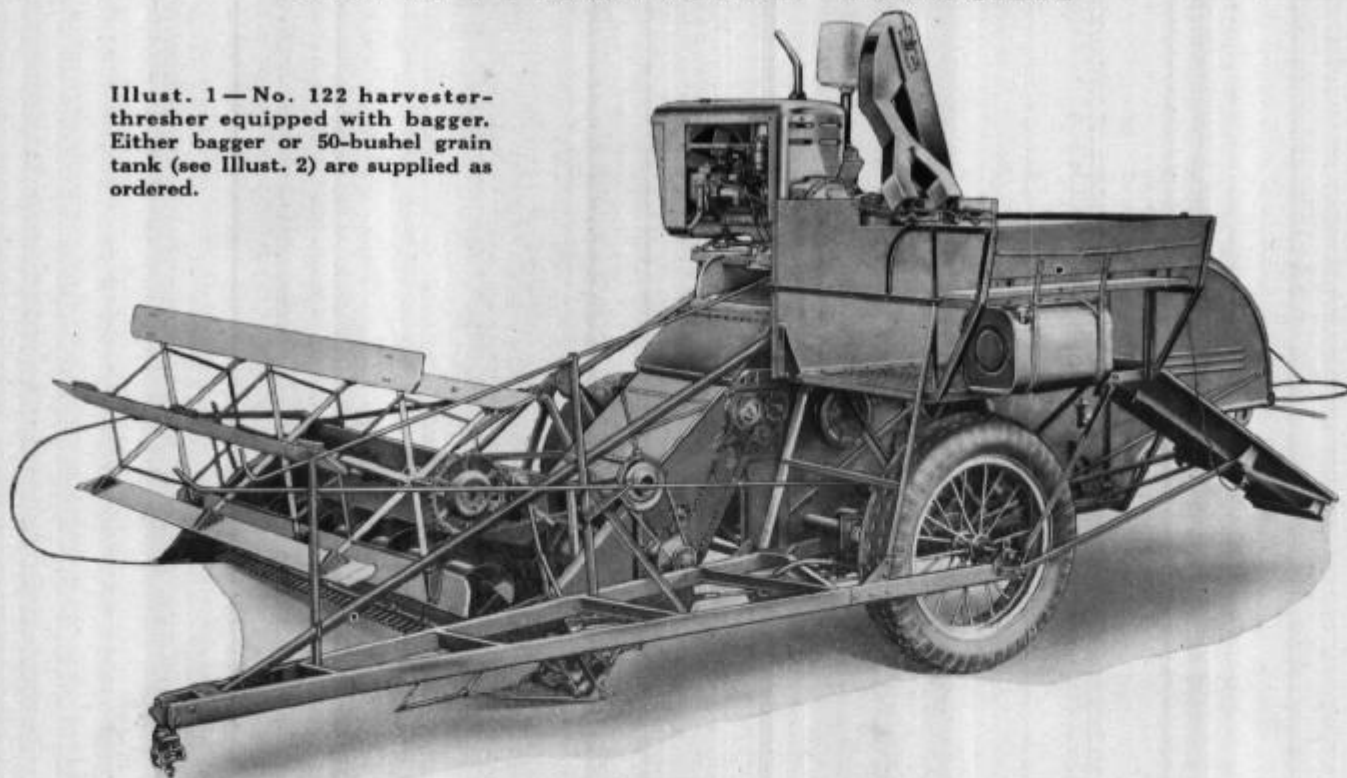


INTERNATIONAL HARVESTER



No. 122 Harvester-Thresher

Illust. 1—No. 122 harvester-thresher equipped with bagger. Either bagger or 50-bushel grain tank (see Illust. 2) are supplied as ordered.



Variable-Speed Cylinder

The rasp-bar cylinder is equipped with a variable-speed drive which can be adjusted quickly and easily to meet the requirements of different crops and threshing conditions. A wide range of speed adjustments (from 1,258 r.p.m. down to 488 r.p.m.) provides the proper threshing speed for all grains and seed crops without having to purchase additional parts or make extensive changes. Adjustments are made by means of a hand-wheel and crank. A special, easy-running chain drive is supplied as an attachment with the edible bean special equipment. This drive provides a cylinder speed of 275 r.p.m.

Variable-Speed Reel

The 6-bat reel is power driven through adjustable pulleys. This permits varying the reel speed (from approximately 21 to 39 r.p.m.) for different harvesting conditions. The pitch of the reel bats is adjustable.

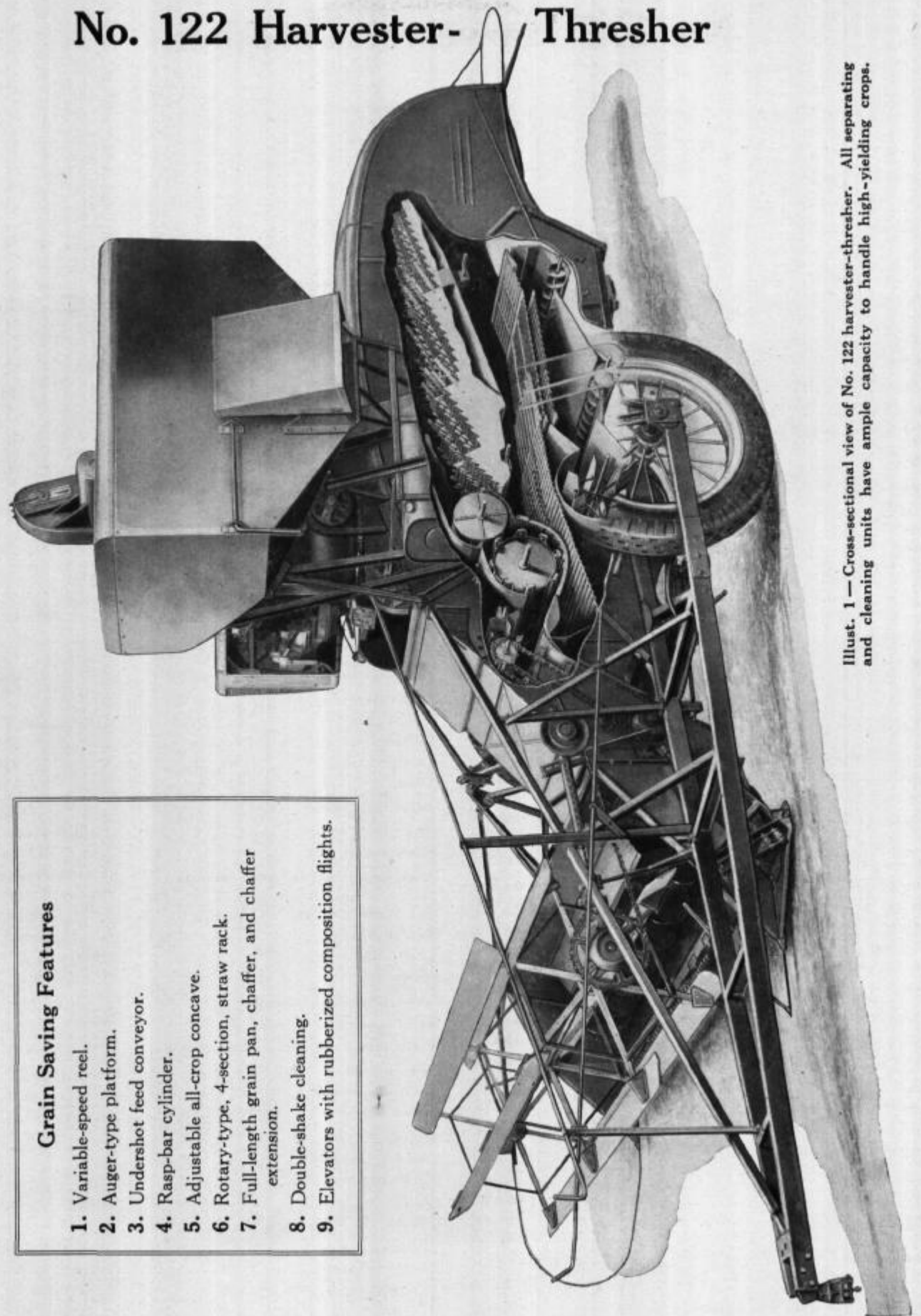
Adjustable Concave

The concave grate openings are quickly adjustable from $\frac{3}{8}$ to $\frac{9}{32}$ -inch width. This makes it unnecessary to purchase or install extra grate equipment for threshing different crops. The concave can be adjusted quickly for any size grain or threshable seed from outside the machine.

Illust. 2—Grain-side view of the No. 122 harvester-thresher. Its clean-cut design results in minimum weight and easy handling.



No. 122 Harvester-Thresher



Grain Saving Features

1. Variable-speed reel.
2. Auger-type platform.
3. Undershot feed conveyor.
4. Rasp-bar cylinder.
5. Adjustable all-crop concave.
6. Rotary-type, 4-section, straw rack.
7. Full-length grain pan, chaffer, and chaffer extension.
8. Double-shake cleaning.
9. Elevators with rubberized composition flights.

Illust. 1 — Cross-sectional view of No. 122 harvester-thresher. All separating and cleaning units have ample capacity to handle high-yielding crops.



No. 122 Harvester-Thresher

Specifications

Width of cut with gather.....12 ft. 8 in.
Length of cutter bar.....12 ft.
Cutting height, range.....Up to 32 in.

Reel:
Number of bats.....6
Type of bats.....Adjustable pitch
Type of drive.....Power
Speeds.....20.7 to 38.5 r.p.m.
Guards.....Straight type, 3-in. spacing
Knife speed.....420 r.p.m.

Type of Platform:
Open-end auger and slatted apron conveyor

Platform control.....Hydraulic

Platform Auger:
Length.....109 in.
Diameter.....16 $\frac{1}{8}$ in.
Speed.....326 r.p.m.

Platform Apron:
Width.....30 $\frac{3}{8}$ in.
Speed of drive roller.....320 r.p.m.
Drive roller.....Rubber covered

Feeder:
Type.....Undershot, slatted conveyor
Width.....30 in.
Speed of conveyor drive shaft.....(regular) 475 r.p.m.

Feed Conveyor Stripper-Beater:
Type.....4-wing, notched edges
Diameter.....8 in.
Speed.....634 r.p.m.
Length.....31 $\frac{1}{2}$ in.

Cylinder:
Type.....Rasp-bar
Number of bars.....8
Length.....31 $\frac{1}{8}$ in.
Diameter.....20 in.
Speed (variable).....1,258 to 488 r.p.m.
Clearance adjustment made by.....Raising or lowering cylinder

Concave:
Slotted grate with adjustable openings.....Regular
Width of openings, adjustable from..... $\frac{3}{8}$ to $\frac{1}{2}$ in.
Bar and wire grate concave.....Special

Concave Finger Grate:
Adjustments.....Can be raised or lowered
Separation area, square inches.....512

Cylinder Beater:
Type.....4-wing, box
Diameter.....16 in.
Length.....31 in.
Bearings.....High-grade roller
Speed.....416 r.p.m.

Number of check flaps above straw rack.....2

Straw Rack:

Type.....Rotary
Number of sections.....4
Length.....96 $\frac{1}{8}$ in.
Width.....32 in.
Crankshaft bearings.....High-grade roller
Speed.....213 r.p.m.
Separation area, square inches.....3,086

Cleaning Fan:

Type.....6 blade
Length.....27 $\frac{3}{4}$ in.
Diameter.....23 in.
Bearings.....High-grade roller
Speed..... $\begin{cases} 728 \text{ r.p.m. Regular} \\ 582 \text{ r.p.m. Special} \end{cases}$

Chaffer:

Type.....Adjustable fin
Length.....40 in.
Width.....29 $\frac{1}{8}$ in.
Area.....1,177 sq. in.

Shoe Sieve:

Type.....Adjustable fin
Length.....40 in.
Width.....30 in.
Area.....1,200 sq. in.

Chaffer Extension:

Type.....Adjustable shutter
Width.....28 $\frac{1}{2}$ in.
Length.....13 $\frac{1}{4}$ in.
Area.....372 sq. in.

Shaker shaft, speed.....259 r.p.m.
Shaker shaft, bearings.....High-grade roller
Total cleaning area.....2,750 sq. in.
Total number ball and roller bearings..... $\begin{cases} 54 \text{ on bagger machine} \\ 56 \text{ on tank machine} \end{cases}$

Main wheel bearings.....Tapered roller
Main wheel tires:.....Implement type
Left side.....9.00 x 36-in. 12-ply
Right side.....7.50 x 36-in. 8-ply
Length of machine, overall.....26 ft. 8 in.
Width of machine, overall.....18 ft. 3 $\frac{1}{2}$ in.
Width of machine with platform removed.....11 ft. 6 in.

Extreme height:

With grain tank.....13 ft. 2 in.
With bagger.....11 ft. 7 in.

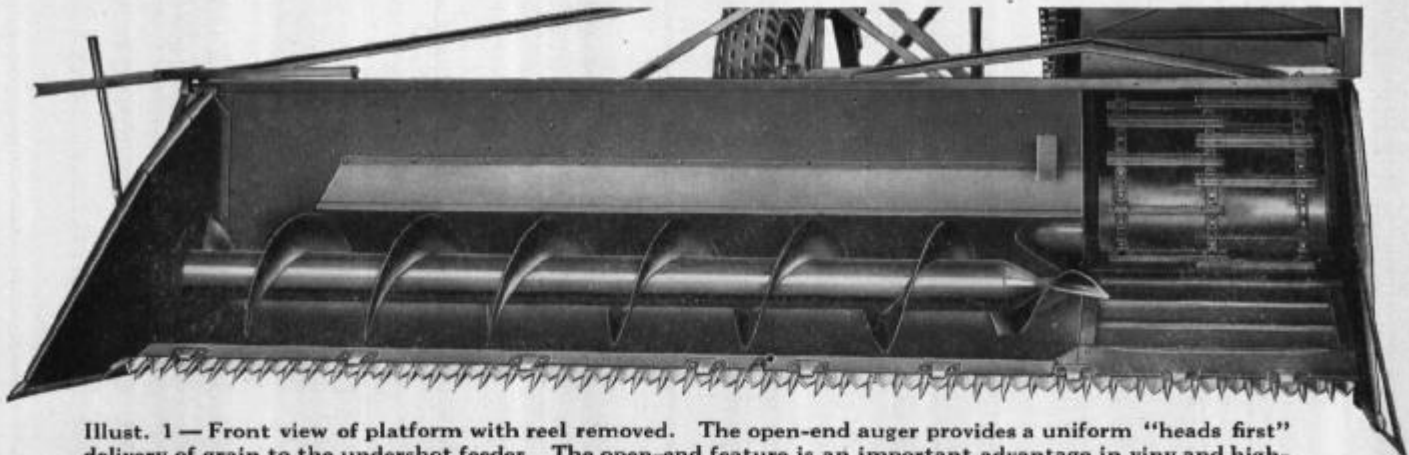
Approximate Weight:

With grain tank.....6,700 lb.
With bagger.....6,370 lb.

Engine.....6-cylinder, heavy-duty
Bore.....3 $\frac{5}{16}$ in.
Stroke.....4 $\frac{1}{8}$ in.
Governed speed.....1,590 r.p.m.
Horsepower at rated speed.....38
Clutch.....Single-Plate, 9 in.



No. 122 Harvester-Thresher

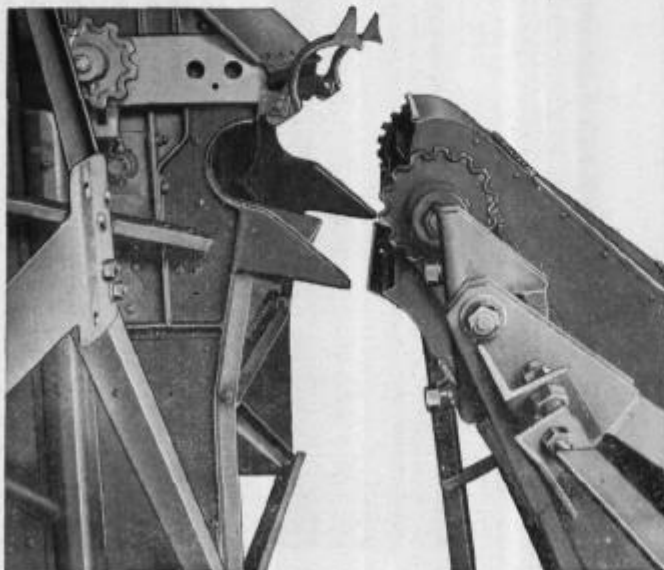


Illust. 1—Front view of platform with reel removed. The open-end auger provides a uniform "heads first" delivery of grain to the undershot feeder. The open-end feature is an important advantage in viny and high-yielding crops. The slatted chain conveyor automatically adjusts itself to the volume of straw on the feeder.

Open-End Auger

The open-end auger provides an even and positive flow of cut grain to the feeder—heads first. It is specially designed to handle a large volume of straw, the material moving off the open end of the auger without wrapping or bunching. Being all-metal construction the auger lasts indefinitely, eliminating the need of expensive platform apron replacement and adjustments. While sturdily constructed, the auger is relatively light in weight. It revolves on ball and roller bearings around the auger tube which is rigidly supported at the outer end. Adjustments are provided to compensate for wear and to keep the auger horizontal.

The platform is shielded at the ends as well as at the rear in order to confine the material to the platform and prevent blowing.



Illust. 2—The platform is quickly detached from the separator for transport or storage by removing two eyebolts which hold the pivot rings in place. Note the two guides which facilitate proper positioning of the platform when reattaching.

Undershot Feed Conveyor

Positive feed to the cylinder is assured in all crops by the undershot feeder. The slatted chain conveyor, working in conjunction with a rubberized feeder apron and a 4-wing upper feed beater, delivers the grain in a uniform stream across the full width of the cylinder. The lower end of the slatted chain conveyor is spring-mounted so that it can automatically adjust itself to the volume of material coming up the feeder.

Hydraulic Platform Lift

The machine is provided with a hydraulic lift for raising or lowering the platform. This makes it easy for the operator to control the cutting height from the tractor seat. A convenient lever engages and releases the lift so that the platform is quickly raised or lowered as desired.

A One-Man Outfit

From his seat on the tractor the operator has full control of the combine and is able to make all necessary operating adjustments. The No. 122 provides all the economy of one-man operation in a 12-foot pull-type combine.



Illust. 3—Operation of the combine is fully controlled from the tractor seat, making this a one-man outfit.



No. 122 Harvester-Thresher

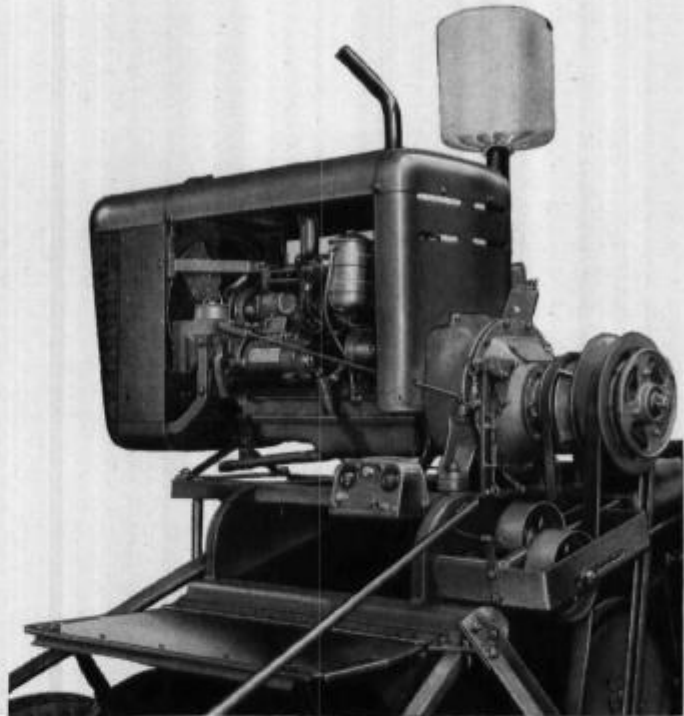
6-Cylinder Engine with Direct Drive

Ample power for operating the combine mechanism is provided by a heavy-duty, 6-cylinder engine equipped with self-starter. The engine is securely mounted above the separator in position to provide a direct V-belt drive to the cylinder and thence to other parts of the machine. Front and rear decks make the engine readily accessible from both sides for inspection and servicing. The engine clutch is controlled by means of a rod extending close to the tractor. This enables the driver to start and stop the combine mechanism from the tractor seat.

Variable-Speed Cylinder

The full-width, all-steel, rasp-bar cylinder has ample capacity to handle all of the material fed to it by the undershot conveyor. The cylinder has eight steel rasp-bars which operate in conjunction with the channel bars on the concave. This construction rubs the kernels out of the heads without cutting or chewing the straw.

The cylinder is driven directly by means of a V-belt variable-speed drive. The cylinder speed can be adjusted from 488 r.p.m. to 1260 r.p.m.—a complete speed range for most threshing requirements. Special drives are available for crops such as beans which require lower than standard cylinder speeds.

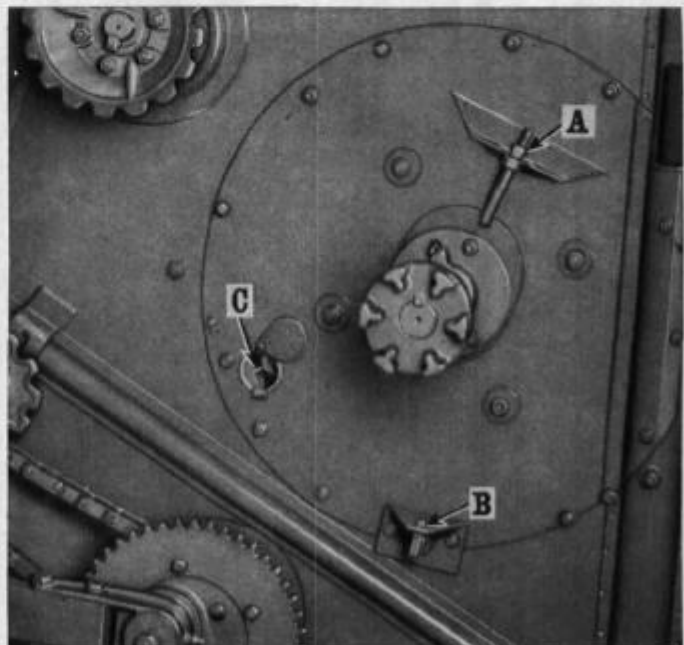


Illust. 2 — The 6-cylinder engine is mounted above the separator, providing a direct V-belt drive to the cylinder. Decks are provided at both front and rear for convenient servicing of the engine.



Variable-Speed Adjustments

Illust. 1 — Cylinder speeds within the complete standard range of 488 r.p.m. to 1260 r.p.m. are attained by means of adjusting pulley diameters on pulleys "A," the engine drive pulley; and "B," the cylinder shaft pulley. As shown, pulley "A" is set at maximum diameter, and "B" at minimum diameter which is the setting for fastest cylinder speed. Convenient, positive cylinder speed adjustment is one of the important features of the No. 122.



Illust. 3 — Cylinder and concave adjustments are conveniently made from the outside of the No. 122. "A" regulates the cylinder clearance; "B" adjusts concave openings; and "C" is the observation port where the operator can quickly measure cylinder clearance.

No. 122 Harvester-Thresher

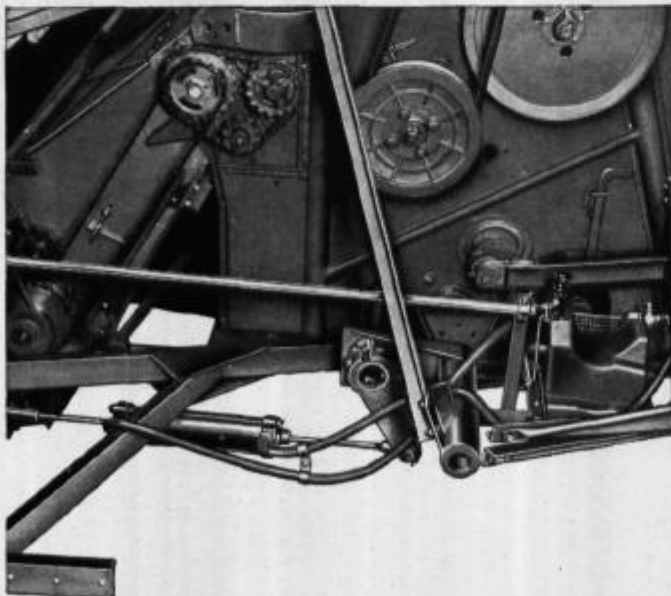
Header is Detachable for Transport

Where it is necessary to move the machine through narrow gates or across bridges, the width of the machine can be reduced to 12 ft. 4 in. by detaching the header unit, comprising the platform and feeder from the separator body. Placed upon the pneumatic-tired transport truck, available for this purpose, the header is then trailed behind the machine.

Two pivot ring clamps, secured by eyebolts, hold the header in alignment with the separator. By removing the eyebolts and disconnecting the lifting arm tubes and drive chains, the unit is freed from the machine. Guides on each side of the separator facilitate correct placement of the feeder when reattaching the unit. In detaching the header it is not necessary to remove the reel.

Hydraulic Platform Lift

No. 122 harvester-threshers are shipped from the factory with hydraulic platform lift as specified, either: (a) with hydraulic lift cylinder, control lever, fittings, and attaching parts, to be operated by tractors equipped with Farmall Lift-All, or (b) with hydraulic pump, hydraulic lift cylinder, fittings and attaching parts—a complete unit which operates independent of the tractor.



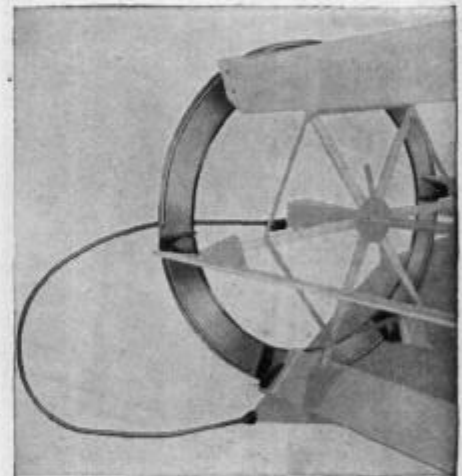
Illust. 1 — The hydraulic platform lift attachment showing hydraulic cylinder, hoses, fittings, and hydraulic pump operated by the cleaning fan shaft. Attachment with components as illustrated, with pump mounted on subframe behind axle, is specified when combine is to be pulled by tractor not equipped with Farmall Lift-All.



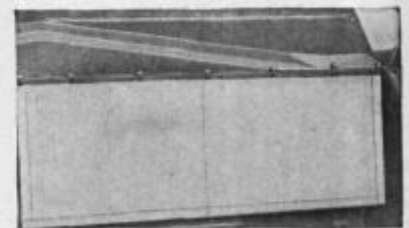
Illust. 2 — A pneumatic-tired transport truck for trailing the platform behind the machine is available on special order. The overall width of the machine, as shown here, is reduced to 12 $\frac{1}{4}$ feet.

Soybean Attachment

Illust. 3 — Outer reel guard, one of several components of the soybean attachment, prevents the crop from wrapping around the reel.



Illust. 4 — The feeder check flap is another of several components of the soybean attachment. Its purpose is to save the crop in the feeding operation.

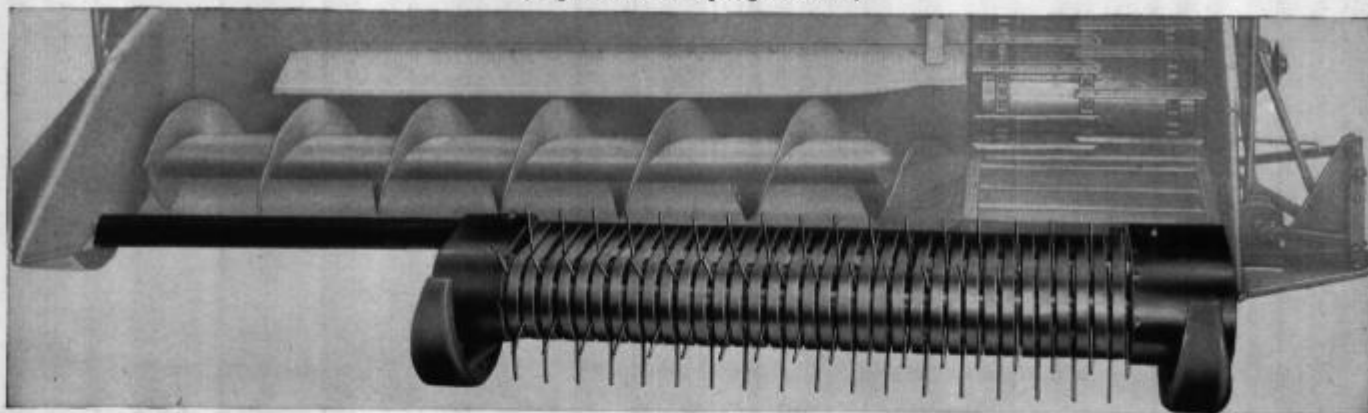


Other special equipment for use in soybeans, not illustrated here, includes wood cylinder filler bars to be used with the regular steel cylinder bars to minimize shattering; notched angle cylinder bars; special reel bats and flaps to save the crop at the platform; concave cover sheet; and shoe sieve with $\frac{1}{16}$ -inch round holes to assure a clean sample.

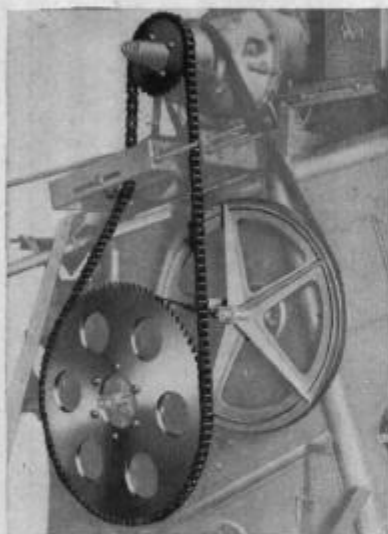


No. 122 Harvester-Thresher

(Special Equipment)

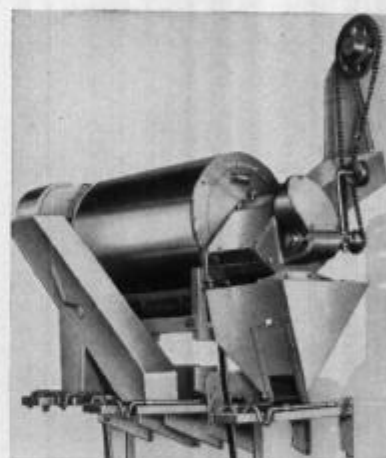
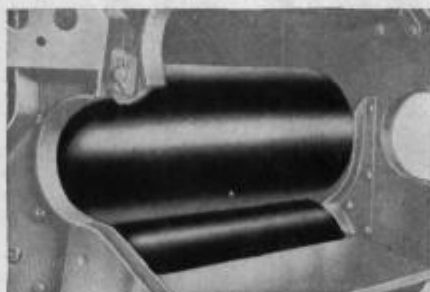


Illust. 1—A windrow pickup attachment is available for the No. 122. Attachment consists of rotating drum with coiled steel, fingerlike tines which gently pick up the grain from the windrow.



Illust. 3—(Above) Edible bean attachment reduces the cylinder speed below the range of adjustments of regular equipment.

Illust. 2—(Below) Flax roll attachment consists of a pair of rubber-surfaced rollers which compress pods before the crop enters the cylinder.

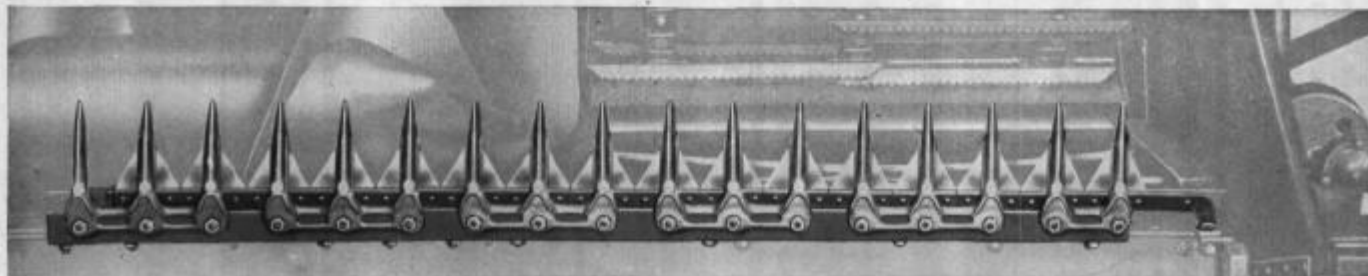


Illust. 6—(Above) ScourKleen attachment removes small weed seeds from heavily-infested grain before it enters the grain tank or bagging attachment.



Illust. 4—(Above) Platform auger trough top shield guides fluffy, light crops into the cylinder.

Illust. 5—(Below) Grain sorghum attachment which is a cutter bar and knife mounted vertically on the platform. Crop is held against knife which clips the heads for threshing.

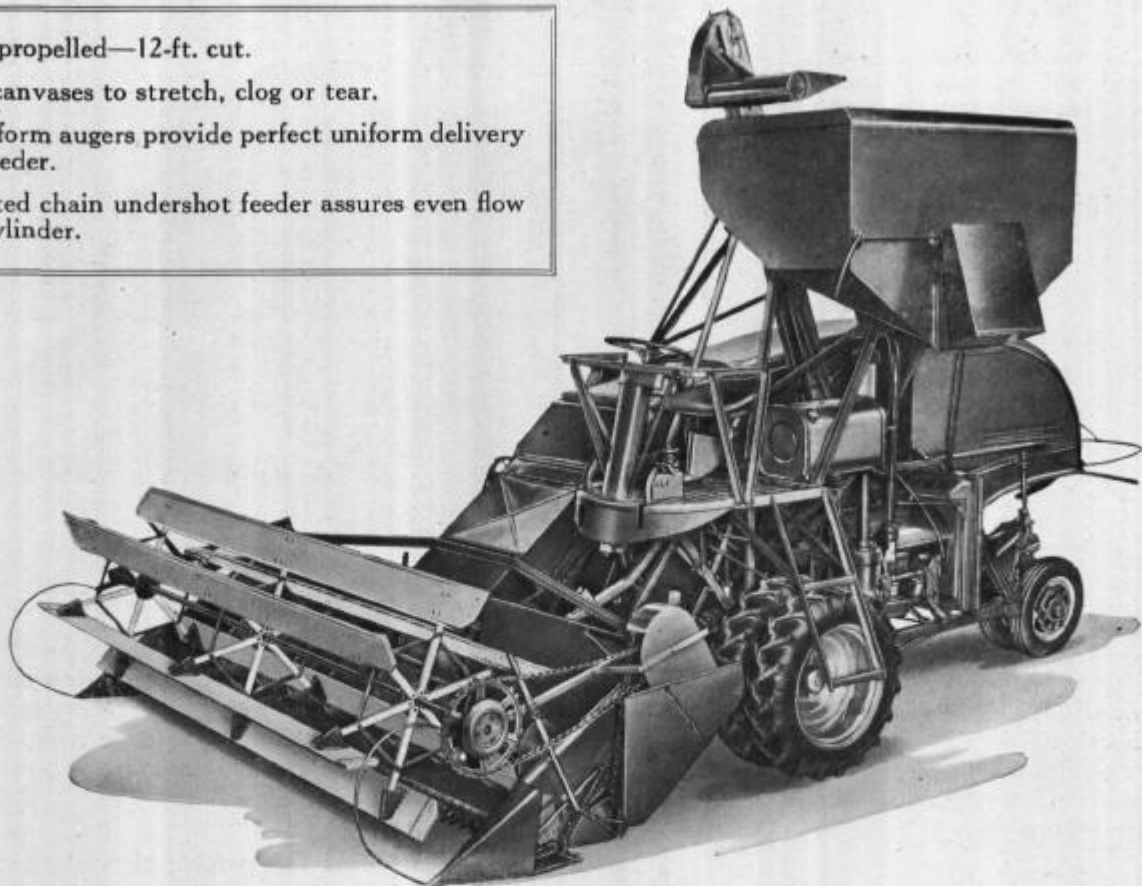


Illust. 7—(Above) Conveyor trough shield for grain and tailings elevator trough. Protects underside of separator when traveling over irrigation ditches, borders, and rough ground.



No. 125-SP Harvester-Thresher

- Self-propelled—12-ft. cut.
- No canvases to stretch, clog or tear.
- Platform augers provide perfect uniform delivery to feeder.
- Slatted chain undershot feeder assures even flow to cylinder.



Illust. 1—The No. 125-SP harvester-thresher equipped with 50-bushel grain tank. Dual wheels are regularly provided for the left side.

One Operator — One Engine — No Backswath

The No. 125-SP is a 12-foot self-propelled harvester-thresher that puts large-scale combining within the practical scope of one-man operation. One engine does all the work, both propelling the machine and operating all moving parts. This saves fuel, oil and upkeep and releases a tractor and operator for other work. In addition to the savings made possible because of one engine and one operator there is a substantial five-way saving in grain. These increased savings, directly resulting from the self-propelled design, are as follows:

1. Saves grain when opening fields . . . no backswath . . . no running over uncut grain.
2. Permits cutting close to irrigation ditches, levees, coulees, and in fence corners so that no grain is wasted.
3. Fields that ripen unevenly, or have wet and weedy spots, can be harvested piecemeal and without loss as each area matures.
4. Forward vision makes it easy for the operator to anticipate varying field conditions and make the proper adjustments in time.
5. In windrow harvesting there is no need to run over windrows and the crop can always be picked up heads first regardless of whether the windrows have been formed by a right or left-hand machine.

Other Advantages

- The greater flexibility and convenience of the self-propelled unit give it a working capacity equal to that of many larger-cut, tractor-drawn combines.
- The weight of the combine is carried on the drive wheels, providing increased traction for tough going.
- Push button starting . . . finger tip control . . . operator comfortably seated where he can oversee all critical working points.



No. 125-SP Harvester-Thresher

Illust. 1 — No. 125-SP harvester-thresher equipped with bagging platform and chute. The operator is in close touch with the bag sewers.



Regular Equipment

Choice of 50-bushel grain tank or bagger. Pneumatic-tired main wheels (3) — 9.00 x 24-in., 8-ply (dual on left side). Pneumatic-tired guide wheels (2) — 5.00 x 16-in., 4-ply. Heavy-duty, 6-cylinder engine with self-starter. Hydraulic platform lift. Rasp-bar cylinder. Adjustable concave. Straw spreader.

Special Equipment

Dual wheel for right side — (9.00 x 24-in., 8-ply). Pneumatic tires (*ricefield*) for main wheels — (13.50 x 28-in., 8-ply). Parts for converting grain machine to rice machine. Pick-up attachment. Flax roll attachment. Wire grate concave. Retarder attachment. ScourKleen weed remover (specify if for grain tank or bagger). Supplemental divider sheets (right and left). Special cylinder

speed drive sprockets — (400 — 650 — 850 — 988 — 1,175 r.p.m.). Special reel drive sprockets (slow speed — fast speed). Parts for converting regular reel to 44-in. diameter. 32-in. diameter reel for use with pick-up. Grain lifters. Hydraulic jack. Pneumatic tire pump. Shoe bottom screens.

Special Crop Attachments

ZDA-1421 for Alfalfa.
ZDA-1566 for Beans (edible).
ZDA-1425 for Bermuda, Blue, Carpet, and Orchard Grasses.
ZDA-1423 for Clovers (Alsike, Hop, Ladino, Lapaceum, White).
ZDA-1422 for Timothy and Clover.
ZDA-1410 for Flax.
ZDA-1424 for Lespedeza.
ZDA-1418 for Red Top Grass.
ZDA-1436 for Soy Beans (machine with regular 54-in. reel).
ZDA-1616 for Soy Beans (machine with special 44-in. reel).

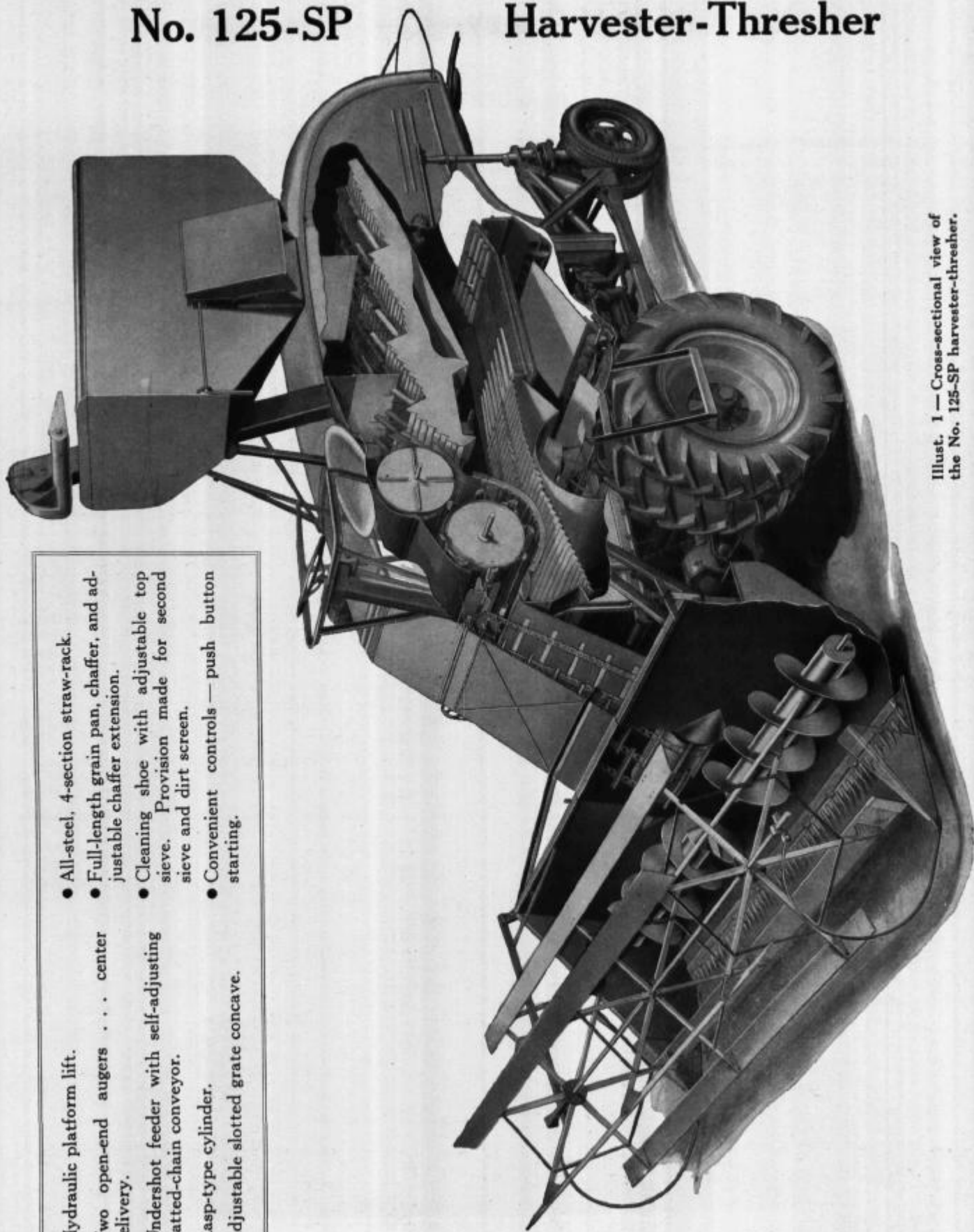


Illust. 2 — The rear guide wheels are controlled by an auto-type steering wheel on the operator's platform. Short turns are quickly made and the machine is easily maneuvered in tight places.



No. 125-SP

Harvester-Thresher



- Hydraulic platform lift.
- Two open-end augers . . . center delivery.
- Undershot feeder with self-adjusting slatted-chain conveyor.
- Rasp-type cylinder.
- Adjustable slotted grate concave.
- All-steel, 4-section straw-rack.
- Full-length grain pan, chaffer, and adjustable chaffer extension.
- Cleaning shoe with adjustable top sieve. Provision made for second sieve and dirt screen.
- Convenient controls — push button starting.

Illust. 1 — Cross-sectional view of the No. 125-SP harvester-thresher.



INTERNATIONAL HARVESTER



No. 125-SP Harvester-Thresher

Specifications

Width of cut with gather 12 ft. 8 in.
Length of cutter bar 12 ft.
Cutting range (height of stubble)..... 1½ in. to 30½ in.

Reel:
Number of bats 6
Type of bats Adjustable pitch
Type of drive Power
Speeds { 32, 37, and 40 r.p.m. Regular
23, 26, 28, 34, 45, 48, 54, and 63 r.p.m. Special
Guards Straight type; 3 in. spacing
Sickle speed 407 r.p.m. (Regular)
Type of header platform Open-end augers
Platform control Hydraulic
Platform augers 2
Length of each 68²⁹/₃₂ in.
Diameter 16¹/₁₆ in.
Speed 288.8 r.p.m. (Regular)

Feeder:
Type Undershot, slatted conveyor
Width 30 in.
Speed of conveyor drive shaft 511 r.p.m. (Regular)

Feed conveyor stripper beater:
Type 4 wing, notched edges
Diameter 8 in.
Speed 666 r.p.m.
Length 31½ in.

Cylinder:
Type Rasp-bar
Number of bars 8
Length 31½ in.
Diameter 20 in.
Speeds { Regular (Grain) 1,073 r.p.m.
Regular (Rice) 850 r.p.m.
Special—300, 400, 650, 988 and 1,175 r.p.m.
Clearance adjustment made by Raising or lowering cylinder

Concaves:
Slotted grate with adjustable openings Regular
Bar and Wire Grate Special

Concave finger grate:
Adjustment Can be raised or lowered
Number of square inches of separation 512

Cylinder beater 4-wing box type
Diameter 16 in.
Length 31 in.
Bearings High-grade roller
Speed { 420 r.p.m.
336 r.p.m.

Number of check flaps above straw rack 2

Straw racks:
Type Rotary
Number of sections 4
Length 96⁷/₁₆ in.
Width 32 in.
Crankshaft bearings High-grade roller
Speed 216 r.p.m.
Number of square inches of separation 3,086

Cleaning fan:
Type 6-Blade
Length 27¾ in.
Diameter 23 in.
Bearings Ball
Speed { 707 r.p.m. Regular
584 r.p.m. Special

Chaffer:
Type Adjustable fin
Length 40 in.
Width 29⁷/₁₆ in.
Area 1,177½ sq. in.

Shoe sieve:
Type Adjustable fin
Length 40 in.
Width 30 in.
Area 1,200 sq. in.

Chaffer extension:
Width 28½ in.
Length 13¼ in.
Area 372 sq. in.

Shaker shaft speed 264 r.p.m.
Shaker shaft bearings High-grade roller
Total cleaning area 2,750 sq. in.
Straw spreader Regular
Total number of ball and roller bearings { Grain Tank 83
Bagger 81

Main Wheels:
Tires (Regular) { Tractor Type 9.00 x 24-in., 8-ply
Dual wheels on left-side; single on right
Tires (Special) { Tractor Type 13.50 x 28-in., 6-ply
Single wheels on left and right sides
Bearings Tapered Roller

Guide Wheels 2
Tire Size—pneumatic, Multi-Rib Type 5.00 x 16 (4 Ply) Regular
Tire Size—pneumatic, Multi-Rib Type 5.00 x 16 (6 Ply) Special
Tire Size—pneumatic, Tractor Type 7.50 x 18 (4 Ply) Special
Bearings Tapered Roller

Length of Machine—overall 24 ft. 10 in.
Width of Machine—overall:
With Grain Tank 13 ft. 10 in.
With Bagger 13 ft. 10 in.

Extreme Height (For machines with 9.00 x 24-in. pneumatic tires)
With Grain Tank 13 ft. 3 in.
With Bagger 10 ft. 4½ in.

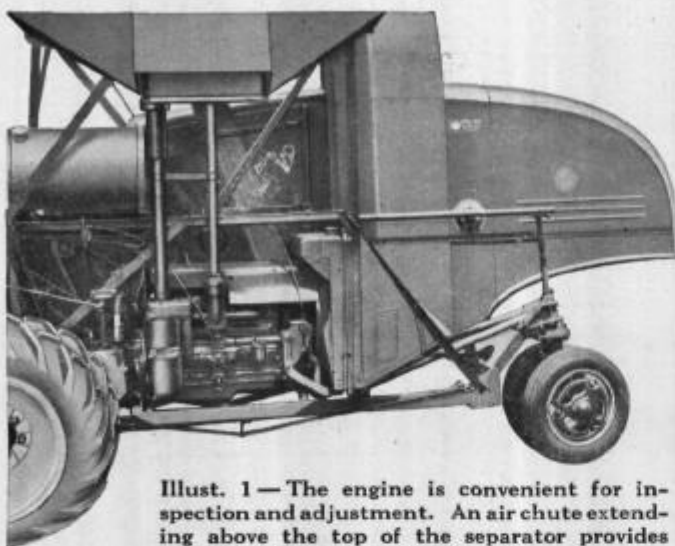
Approximate Weight (For machines with 9.00 x 24-in. pneumatic tires)
With Grain Tank 7,273 lb.
With Bagger 6,950 lb.

Engine Six-cylinder, heavy duty
Bore 3⁵/₁₆ in.
Stroke 4½ in.
Governed speed 1,763 r.p.m.
Horsepower at rated speed 45
Number of clutches 2
Transmission Four speeds forward, one reverse

Travel Speed

Equipment	Gear Shifter Position	Miles Per Hour	
		With Regular Sprockets	With Special Sprockets
For machines with 9.00 x 24-in. tires and Grain Machine Transmission (26880-K)	First.....	1.00	1.32
	Second.....	2.09	2.73
	Third.....	2.91	3.82
	Fourth.....	6.44	8.43
	Reverse.....	0.83	1.07
For machines with 13.50 x 28-in. tires and Grain Machine Transmission (26880-K)	First.....	1.19	
	Second.....	2.49	
	Third.....	3.46	
	Fourth.....	7.64	
	Reverse.....	0.90	

No. 125-SP Harvester-Thresher

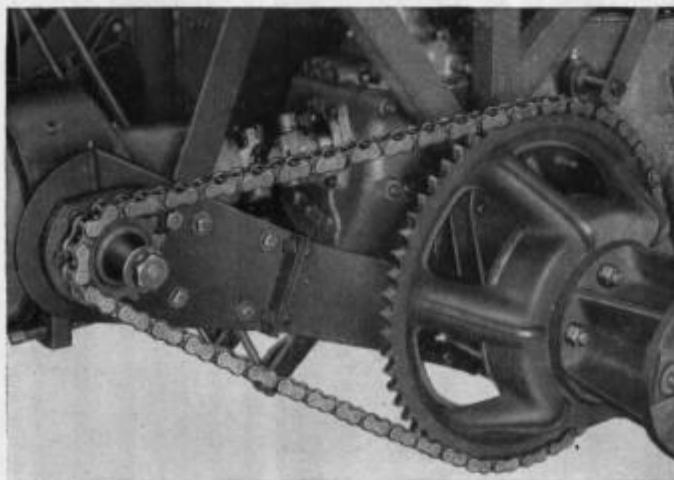


Illust. 1—The engine is convenient for inspection and adjustment. An air chute extending above the top of the separator provides clean air for radiator ventilation.

Heavy-Duty, 6-Cylinder Engine

The heavy-duty, 6-cylinder engine provides ample power not only for operating the cutting, feeding, and threshing mechanisms but also for propelling the machine.

The engine, transmission gears, and differential are standard International manufacture. Improved cylinder head and combustion chamber design provide new standards of fuel economy, smooth operation, and power output. Positive lubrication is assured by the full-pressure oiling system. The transmission provides four speeds forward and one reverse. Changes in travel speed do not affect the threshing speed. The engine is regularly equipped with a self-starter controlled by a push button from the operator's platform.



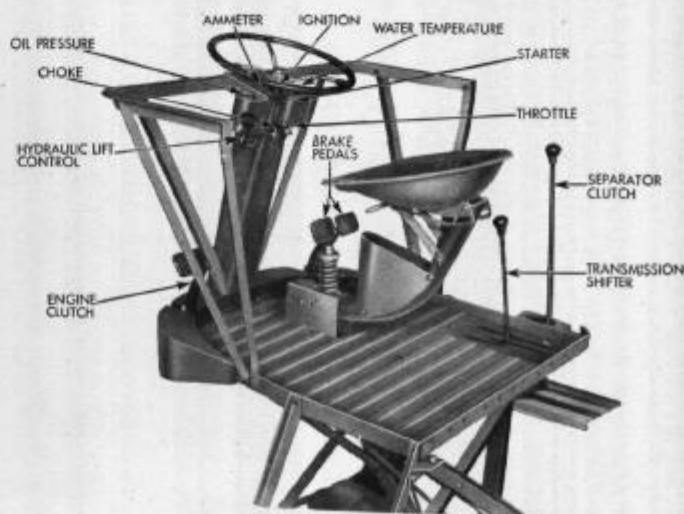
Illust. 2—Final drive to main wheel. Power is transmitted from the engine gear case to the differential by means of a flexible coupling and from the differential shaft to each main wheel by heavy-duty roller chains.



Illust. 3—The operator has a clear view of the work ahead and below him. He is also in best position to observe and check other critical working points.

Full Vision and Finger-Tip Control

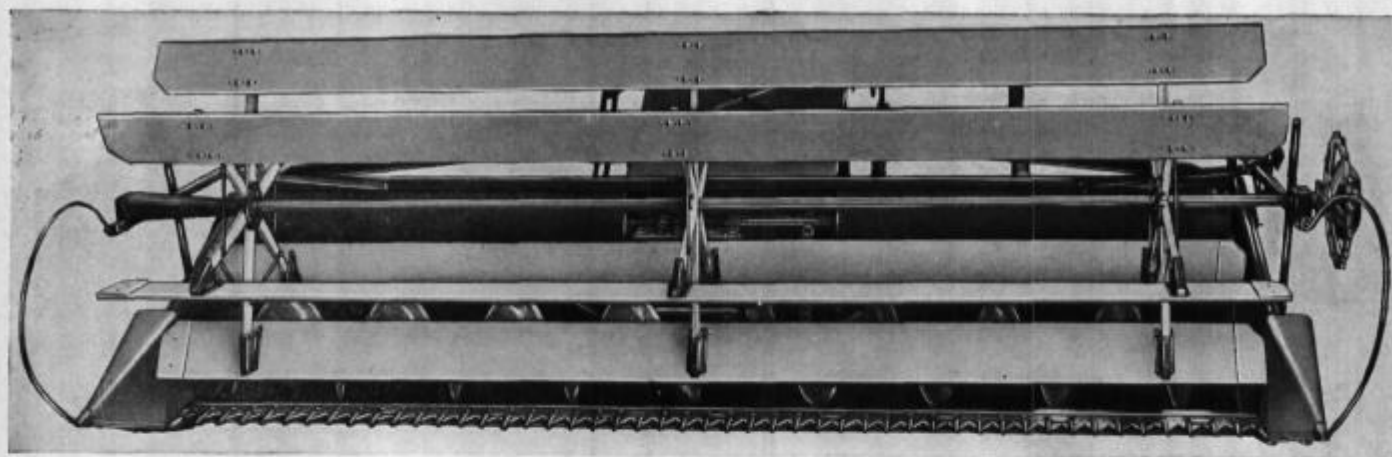
All pedal and lever controls for operating the machine are within easy reach. The operator sits in comfort above the dust and has a commanding view of the cutter bar and feeder in front of him. From the control platform he can reach the grain delivery spout and check the sample. He can also reach and sample the tailings to check the setting of the machine. Depressing the engine clutch pedal halts the travel of the machine but does not stop the separator. This allows the operator to clear the machine when necessary. The convenient hydraulic lift lever provides finger-tip control of the cutting platform. The ammeter, oil pressure and temperature gauges, ignition switch and starter button are in full view in the panel below the steering wheel.



Illust. 4—Operator's platform showing the various controls centralized for easy operation and complete governing of the machine.



No. 125-SP Harvester-Thresher



Illust. 1 — Front view of header platform showing the power-driven, 6-bat, adjustable-pitch reel and smooth level platform with two auger conveyors.

Hydraulic-Lift Platform

The platform is raised and lowered by hydraulic power making it possible to meet changing field conditions quickly and without manual effort. A touch on the hydraulic control lever sets the platform at the desired height; the hydraulic pump and rugged pull-type cylinder doing all the work. The platform is well shielded at both ends and at the rear. This confines the cut material to the platform and prevents blowing.

Canvasless Feed

Two augers and a slotted-chain undershot feeder provide an even flow of material to the cylinder . . . no old-style canvases to stretch, clog or tear . . . result, more efficient threshing.

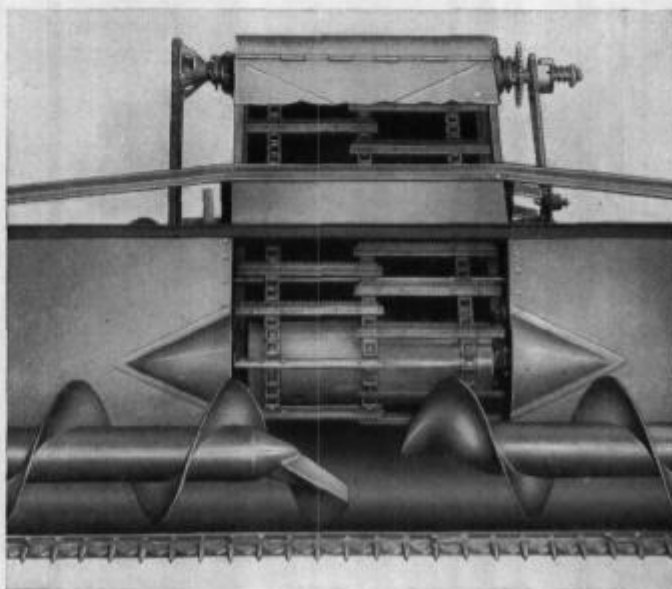
Two augers positively deliver the swath from each end of the smooth, level platform in a uniform stream

directly to the cylinder feeder. The cylinder feeder is of the undershot type. It consists of three chains with metal slats and is free-floating at the lower end so that it automatically adjusts itself to the volume of material moving to the cylinder. This type of feeder assures an even flow of material to the cylinder . . . no bunching or choking. This even flow of material assures more efficient threshing.

A four-wing notched beater located, ahead of the cylinder, further aids in feeding the material in an even stream across the full width of the cylinder. A hinged feed plate prevents any leakage of grain between the feeder and cylinder.



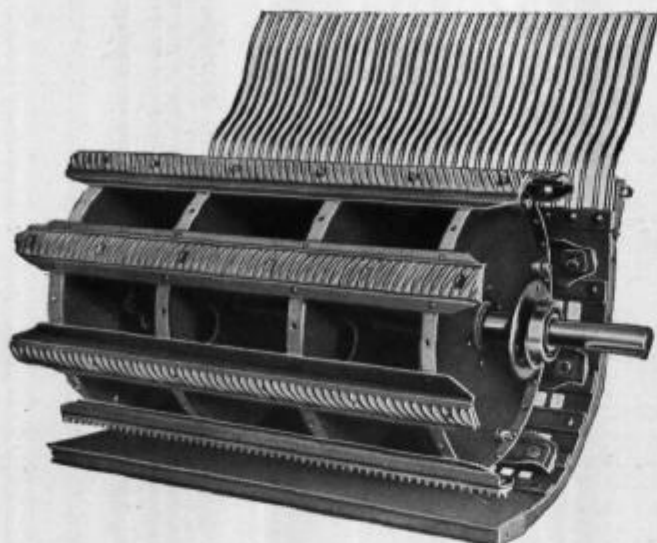
Illust. 2 — Diagram view of platform showing how the hydraulic lift functions.



Illust. 3 — The undershot feeder, with self-adjusting slatted-chain conveyor and two platform augers, assures positive and uniform grain delivery to the cylinder.



No. 125-SP Harvester-Thresher

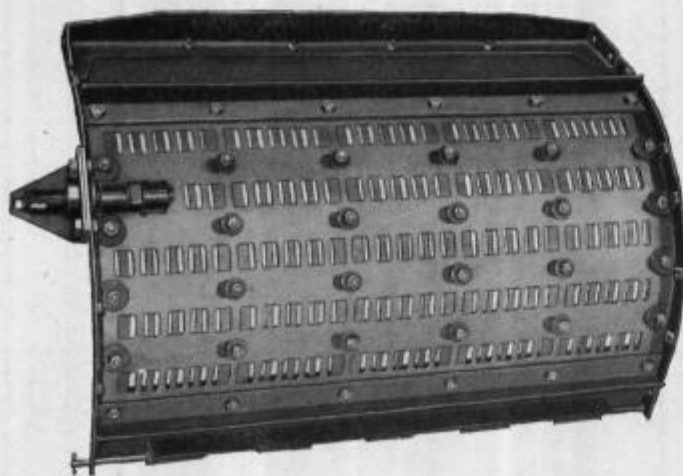


Illust. 1 — Cylinder, concave and finger grate. The cylinder has 8 alternately corrugated steel bars operating in conjunction with the stationary concave bars. The openings in the concave are adjustable and the finger grate at the rear can be adjusted up or down.

Rasp-Bar Cylinder

The full-width, all-steel, rasp-bar cylinder has ample weight and speed to handle all the material fed to it by the undershot conveyor. It effectively rubs the kernels from the heads without cutting or chewing the straw into small particles, thereby facilitating separation.

The cylinder is driven from the gear case by a double roller chain which operates independent of the separator drive. This makes it possible to change the cylinder speed, by substituting one drive sprocket for another, without affecting the speed of other drives.



Illust. 2 — Concave viewed from under side and showing the movable adjusting plate which regulates the openings from $\frac{7}{8} \times 1\frac{1}{4}$ inches down to $\frac{3}{16} \times 1\frac{1}{4}$ inches. Adjusting screw is shown at left.

Slotted Concave Grate with Adjustable Openings

The size of the concave grate openings is adjustable so that all grains and seed crops of various sizes can be threshed without changing the concave. Adjustments are conveniently made from outside the machine by means of a lateral screw adjustment—See A, Illust. 3.

The concave has two flat and four channel bars to assist the cylinder in the threshing operation. One or more of these bars can be removed as conditions may require.

Convenient Clearance Adjustment

Clearance adjustments between the cylinder and concave are quickly made by means of screw adjustments on each side of the machine—See B, Illust. 3. Extremely accurate adjustments are obtainable.

Major Separation at Concave and Finger Grate

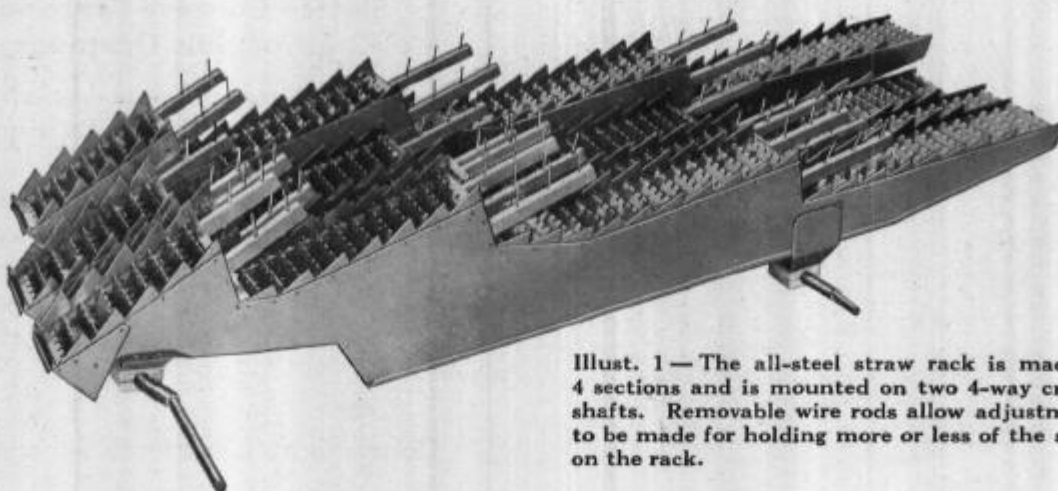
Under normal conditions the greater proportion of grain or seed is separated from the straw before it reaches the straw rack. This means that much of the seed is handled only once, thus reducing the possibility of cracking when threshing brittle seeds such as edible beans, soybeans, peas, etc.



Illust. 3 — Adjustments are conveniently made from outside the machine. A, is screw for adjusting concave openings. B, is cylinder clearance adjusting screw (one on each side). C, indicates notched adjusting lever for regulating intensity of cleaning fan blast.



No. 125-SP Harvester-Thresher



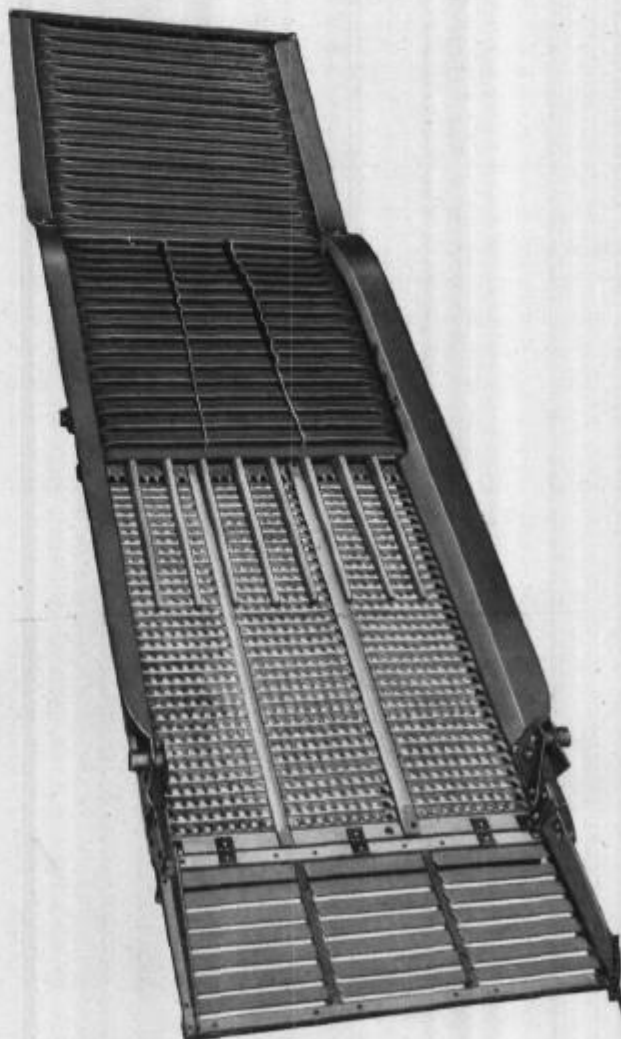
Illust. 1—The all-steel straw rack is made in 4 sections and is mounted on two 4-way crankshafts. Removable wire rods allow adjustments to be made for holding more or less of the straw on the rack.

Big-Capacity Units for Saving and Cleaning the Grain

- All-steel, 4-section, rotary type **straw rack**, with respaceable wire rods. Provides maximum effective area for separation.
- Two **check flaps** above straw rack prevent loss of flying kernels.
- Full-length **grain pan** with fingers which float out coarse material and prevent clogging on chaffer.
- Adjustable fin-type **chaffer** with dividers.
- Shutter-type **chaffer extension**, fully adjustable to save the tailings and float out coarse material.
- **Cleaning shoe** with adjustable top sieve and (optional) lower sieve.
- **Cleaning fan** with 6 curved blades. Provides ample air blast, fully controllable, for cleaning all crops.



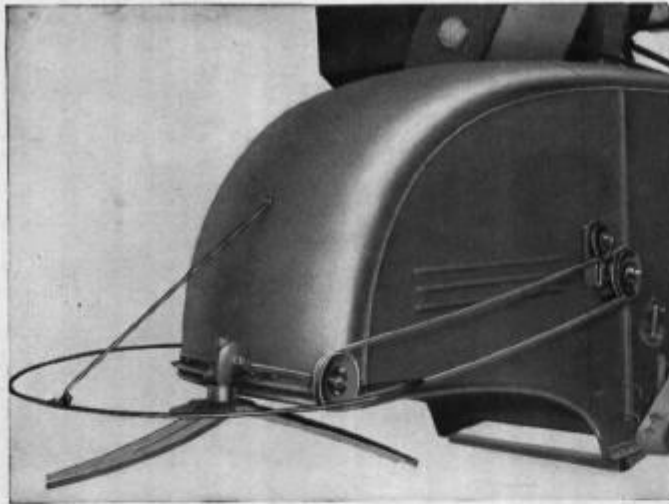
Illust. 2—Cleaning shoe with adjustable top sieve. A second sieve, as shown, can be used underneath. Special dirt and weed screens are available for the shoe bottom.



Illust. 3—The full-length grain pan, chaffer, and adjustable chaffer extension are built into one frame so that all three oscillate in unison, and move the threshed grain, chaff, etc., to the rear.



No. 125-SP Harvester-Thresher

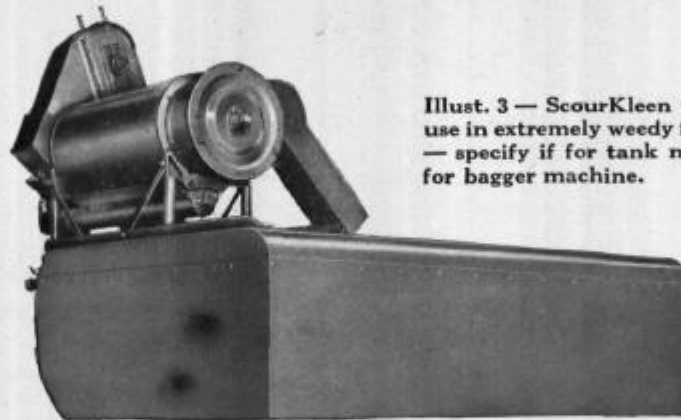


Illust. 1 — The machine is regularly equipped with straw spreader.



Illust. 2 — A pickup attachment for gathering wind-rowed crops is available on special order.

**Equipment
For Every
Harvesting
Need**



Illust. 3 — ScourKleen weed seed remover for use in extremely weedy fields. Supplied special — specify if for tank machine (as shown) or for bagger machine.



Illust. 4 — A wide variety of attachments are available for harvesting special seed crops. Shown above is the combine equipped with reel end guards which are part of the Soybean Attachment.

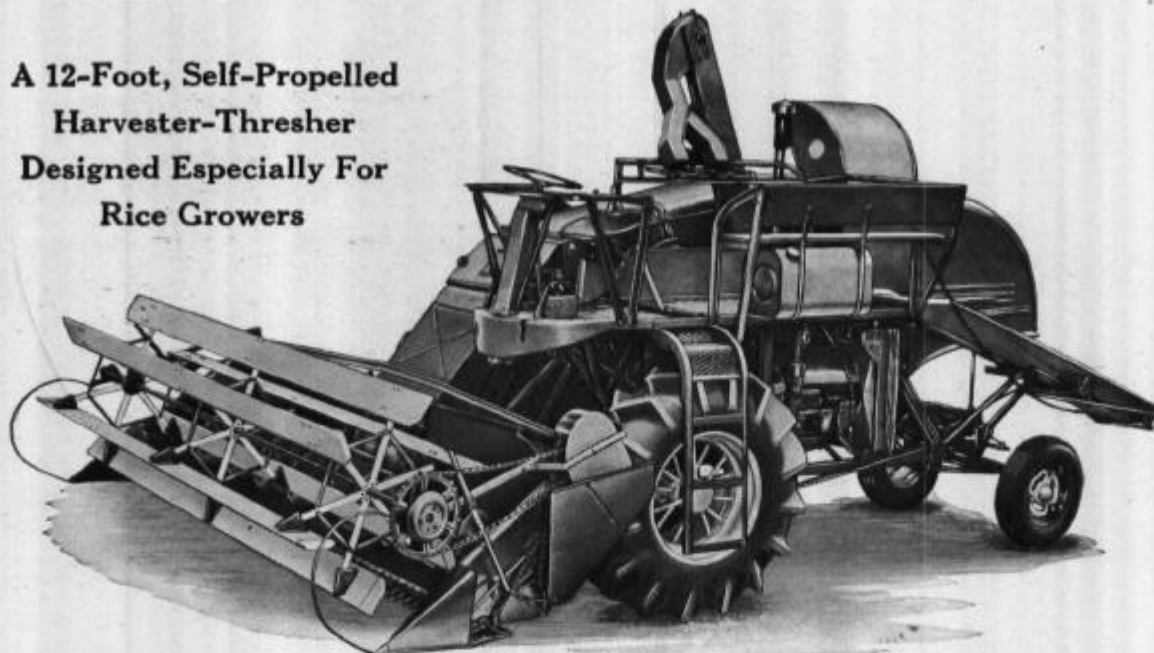


INTERNATIONAL HARVESTER



No. 125-SP Rice Special

**A 12-Foot, Self-Propelled
Harvester-Thresher
Designed Especially For
Rice Growers**

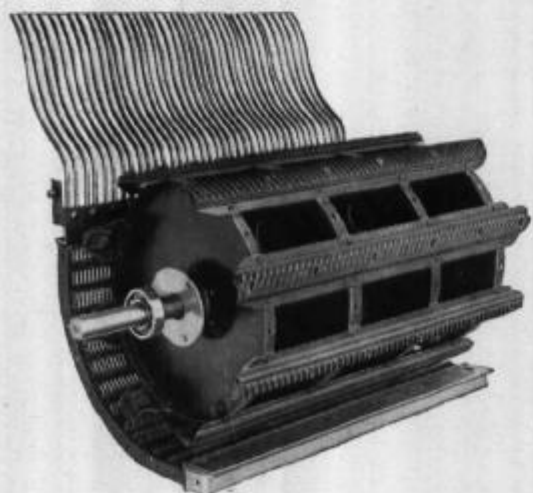


Illust. 1 — No. 125-SP Rice Special harvester-thresher equipped with bagging platform. The drive wheels have deep-lugged tires especially designed for muddy going.

This machine, while similar in many respects to the No. 125-SP grain combine described on the foregoing pages, has special features adapting it to the particular needs of rice growers. The self-propelled design is especially valuable for work in rice fields where it is often necessary to operate over levees, close to irrigation ditches and around wet or green spots. Deep-lugged tires and weight over the main drive wheels assure traction in fields where a pull-type machine could not be operated.

Distinctive Rice Machine Features

Deep-lugged, "rice field" tires (13.50 x 28-in., 6-ply) on main wheels.



Illust. 2 — The rasp-type cylinder has notched cross bars. A bar and wire grate concave is regular equipment.

Wide-spread guide wheels with 7.50 x 18-in., 4-ply tires.
Rasp-type cylinder with notched bars.
Cylinder speeds suitable for rice — 850 r.p.m. regular.
Bar and wire grate concave.
Shields for platform auger bottom.

(Other features of this machine are essentially the same as for standard No. 125-SP grain combine.)

Regular Equipment

Choice of bagger or 50-bushel grain tank. Features as listed above.

Special Equipment

Parts to convert rice machine to grain machine. Attachments as listed under standard No. 125-SP grain combine.

Specifications

The following specifications are distinctive to the No. 125-SP Rice Special. For other specifications, not given here, refer to Specifications listed under the standard No. 125-SP grain combine.

Cylinder:	
Type.....	Rasp with notched bars
Speed (regular).....	850 r.p.m.
Main Wheels:	
Pneumatic tire size.....	13.50 x 28 in. (6-ply)
Guide Wheels:	
Pneumatic tire size.....	7.50 x 18 in. (4-ply)
Travel Speeds: (miles per hour)	
First.....	1.19
Second.....	1.83
Third.....	2.66
Fourth.....	7.64
Reverse.....	0.90
Approximate Weight:	
With bagger.....	8,217 lb.
With grain tank.....	8,414 lb.



No. 51 Harvester-Thresher

**Especially Designed
for
Hillside Harvesting**



Illust. 1 — No. 51 harvester-thresher equipped with 14-foot header, bagging platform and special 50-bushel grain tank. Delivery can be shifted quickly from grain tank to bagger and vice versa.

The No. 51 harvester-thresher is a wide-cut machine built especially for use in hilly and inter-mountain regions where steep grades are frequently encountered. Its rugged construction, self-leveling cleaning unit, raddle type straw carrier and efficient power leveling device adapt it especially to hillside work. The machine will level and function properly on grades up to 65 percent with the header uphill and on 35 percent grades with the header downhill.

Other distinctive features are the floating type header with "laid down" elevator and continuous canvas, the single-wheel forecarriage, and a combined bagging and operator's control platform.

Convenient Controls

The operator's platform is located well above the dust line and assures full visibility for the operator to oversee the work and make all necessary adjustments. The cutting height is controlled by means of a tiller wheel. This wheel and the controls for the power leveling device, wheel brakes, engine throttle and clutch are all conveniently located. The operator has ample room to sit or stand as he prefers.

Bagger Equipment

The bagger equipment consists of a roomy platform large enough to accommodate several men if necessary, a seat for the sack sewer, a two-way bagging spout, sack hangers, and a sack chute. The latter holds four or more bags and is provided with a gate at the bottom, controlled by a trip release. Safety springs absorb the shock of bags striking the gate and prevent bag breakage.

Regular Equipment

Tractor hitch. 14-foot platform. 6-cylinder engine. Combination bagging and operating platform. Bagger equipment. Steel wheels. Brakes for main wheels. Transport truck. Straw dump.

Special Equipment

2-foot platform extension to convert machine to 16-foot cut (includes 16-foot knife and platform canvas). 50-bushel grain tank (auger delivery). Pickup attachment. Straw spreading attachment. Chaff collector for use with spreader. Chaff collector for use with straw dump. Platform canvas control attachment. Pea and bean attachment (450 r.p.m.). Bean attachment (265 r.p.m.). Reduced cylinder speed attachment (825 r.p.m.). Main wheels with tractor type tires, 11.25 x 36-inch, 10-ply. Front wheel with implement type tire, 9.00 x 16-inch, 10-ply. Grain wheel with implement type tire, 6.50 x 36-inch, 6-ply. Transport wheel with implement type tire, 6.50 x 36-inch, 6-ply.

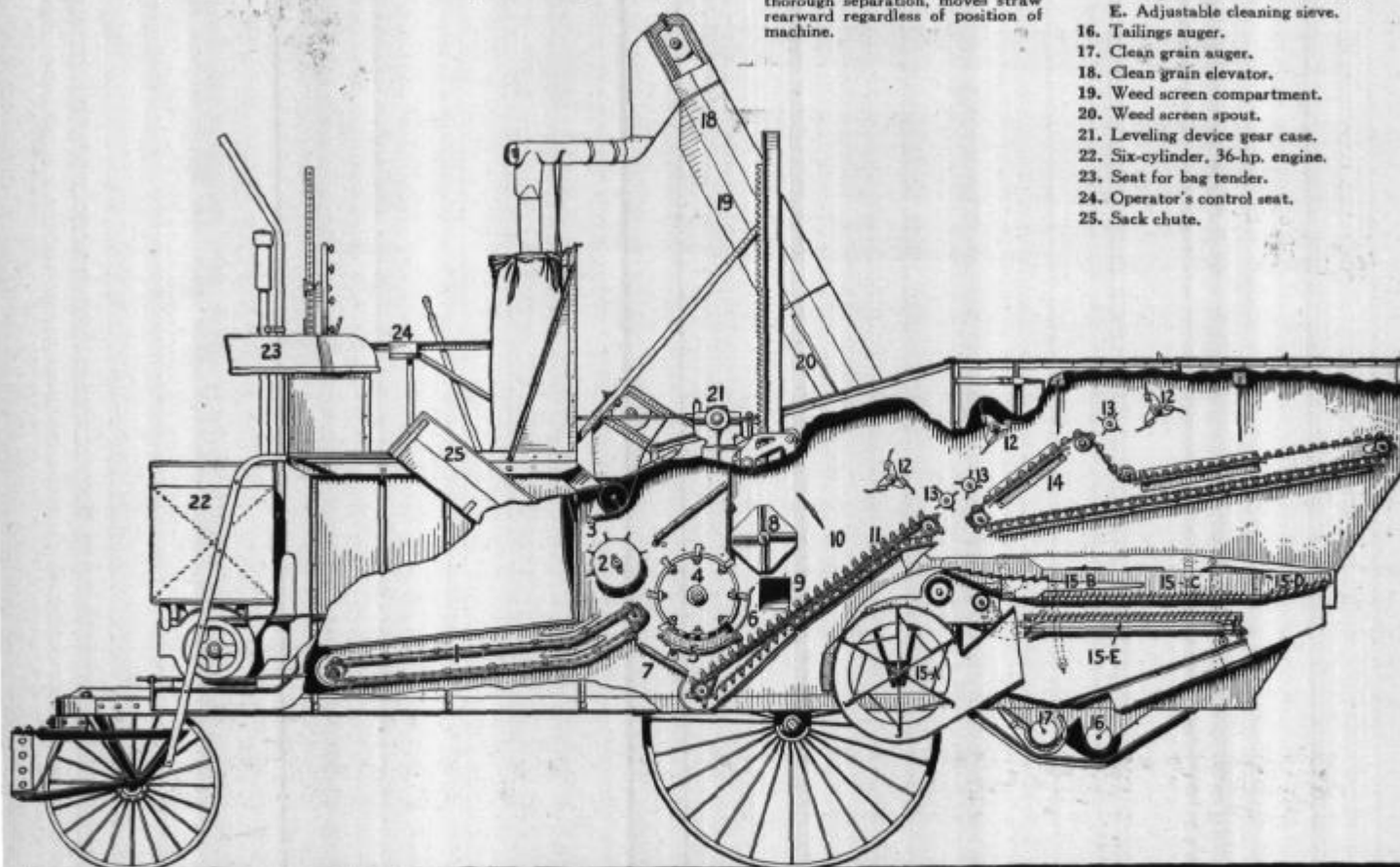


Illust. 2 — The left-side main wheel is mounted on a crank axle and is raised or lowered by power to level the separator on hillsides.



No. 51 Harvester-Thresher

1. Wide, roomy feeder; slatted chain carrier.
2. Spiked beater, assures uniform feed to threshing cylinder.
3. Tailings return spout.
4. Ball-bearing threshing cylinder, 28 inches wide.
5. Concave, adjustable front and rear.
6. Finger grate, highly effective. 80 to 90 percent of grain separation takes place at concave and grate.
7. Grate plate, deflects shelled kernels to grain carrier. Hinged to give underneath access to concaves.
8. Main beater, deflects straw downward.
9. Clean grain screenings return spout.
10. Beater flap, checks flying grain kernels.
11. Slatted grain conveyor, elevates threshed grain and straw. Keeps them separate.
12. Toothed beaters { Assist in grain separation: tear straw apart.
13. Picker rolls {
14. Raddle-type straw carrier, assures thorough separation, moves straw rearward regardless of position of machine.
15. Self-contained cleaning unit mounted in automatic leveling frame. Entire unit (including fan) automatically maintains horizontal position at all times.
 - A. Cleaning fan.
 - B. Chaffer fingers.
 - C. Adjustable chaffer sieve.
 - D. Adjustable chaffer extension.
 - E. Adjustable cleaning sieve.
16. Tailings auger.
17. Clean grain auger.
18. Clean grain elevator.
19. Weed screen compartment.
20. Weed screen spout.
21. Leveling device gear case.
22. Six-cylinder, 36-hp. engine.
23. Seat for bag tender.
24. Operator's control seat.
25. Sack chute.



Illust. 1 — Interior sectional view of No. 51 harvester-thresher showing arrangement of the threshing, separating and cleaning units.

Specifications

Width of cut.....	14 ft. (regular)
With special 2-foot extension.....	16 ft.
Width of separator.....	36 in.
Range of platform cutting height.....	3 to 33 in.
Width of platform canvas.....	40 in.
Main wheels.....	Number.....2 Diameter.....54 in. Face.....12 in. Bearings.....Tapered roller
Grain wheel.....	Diameter.....44 in. Face.....4 1/8 in. Bearings.....Roller with sleeve
Forecarriage.....	Type.....Single-wheel turntable Diameter.....34 in. Face.....9 in. Bearings.....Tapered roller
Type header.....	Floating
Header balanced by.....	Beams and weights

Cylinder.....	Type.....Spike-tooth Length.....28 in. Diameter.....18 in. Bearings.....Ball R.P.M. (normal).....1090
Type separator.....	Raddle
Cleaning system.....	chaffer and shoe (automatic leveling)
Engine.....	Model.....International GRD Number of cylinders.....6 Bore.....3 5/8 in. Stroke.....4 1/8 in. R.P.M. (governed speed).....1,500 H.P. at rated speed.....36
*Length machine overall.....	22 ft. 4 in.
Height.....	13 ft.
Width overall.....	27 ft. 7 in.
Width overall when header is trailed for transport.....	10 ft. 9 in.
Weight, approximate.....	10,583 lb.

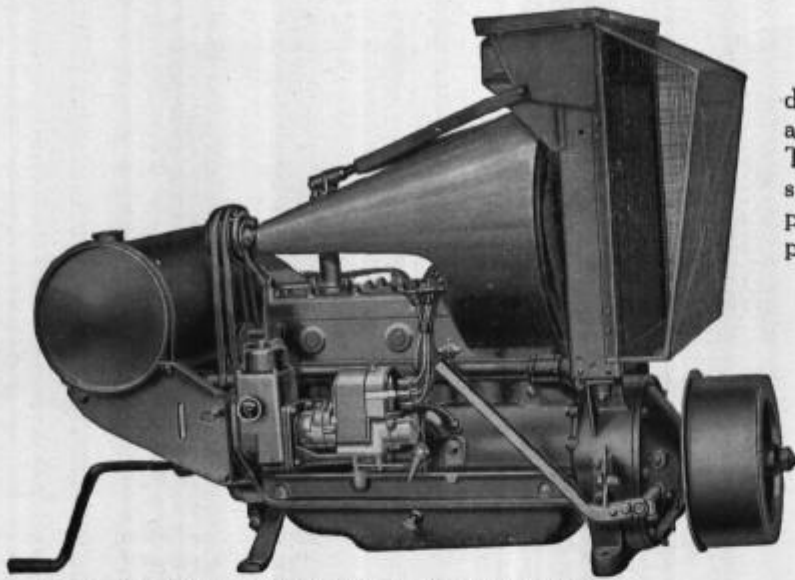
* Measured from hitch plate to rear of separator minus hood or collector.



INTERNATIONAL HARVESTER



No. 51 Harvester-Thresher

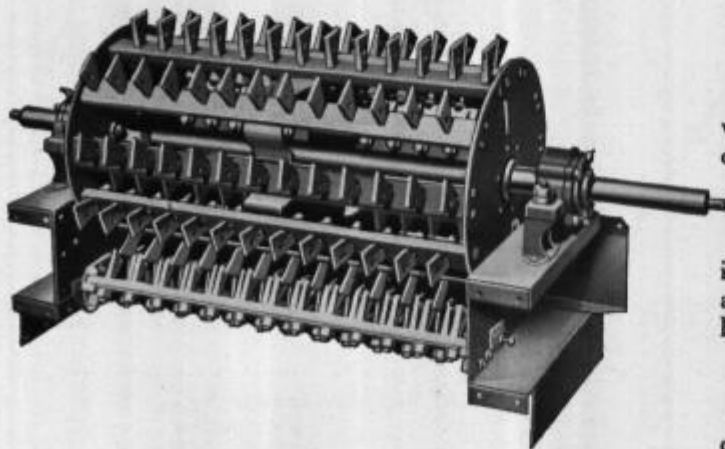


Illust. 1 — The 6-cylinder, International GRD engine supplies ample power for operating the combine mechanism.

Big-Capacity Threshing Cylinder

The big-capacity spike-tooth cylinder and concaves assure thorough threshing in the heaviest crops. The impact of the cylinder teeth, revolving between rows of stationary concave teeth, effectively loosens the kernels from the heads so that the grain is easily separated and cleaned. The position of the concaves is adjustable at both front and rear. The concaves can be changed readily from underneath the machine. They can also be removed from in front through the feeder house after the spiked beater has been removed.

The steel finger grate at the rear of the concave extends upward well around the lower circumference of the cylinder, providing a large and effective separating area.



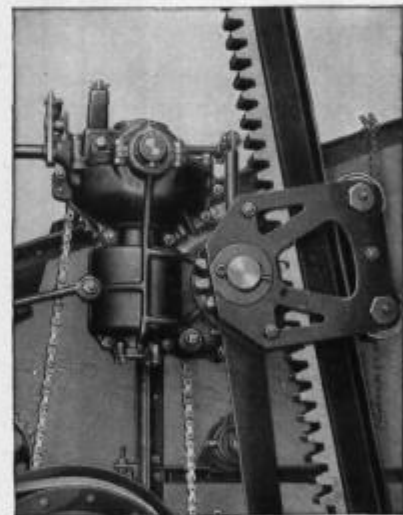
Illust. 2 — Spike-tooth cylinder and concave assembly. The cylinder revolves on self-aligning ball bearings and has a normal speed of 1,090 r. p. m. Attachments are available for special crops requiring reduced speeds.

Powerful 6-Cylinder Engine

The No. 51 combine is equipped with a heavy-duty, 6-cylinder International Model HD engine, assuring ample power for all harvesting conditions. The engine is fully equipped with automatic impulse starter, throttle governor, oil air cleaner, impeller pump, etc. A radiator screen and engine shield prevent accumulation of straw and chaff.

Sturdy Drives

The drives are simple, sturdy, and arranged in the most effective manner. The header mechanism is operated by drive shafts and fully-enclosed gears that operate in oil. The principal drive chains are heavy-duty roller type, quiet-running and long-lived. The cylinder is driven direct from the engine by means of a belt. Safety slip clutches protect the various units of the machine against breakage.



Illust. 3 — Power leveling device gear case and rack.

Power Leveling Device

The left-hand main wheel is mounted on a crank axle which is connected to a rack actuated from the leveling device gear case. Movement of the rack raises or lowers the main wheel, as desired, to level the separator on hill slopes. The gears, clutch and bearings of the device are high-grade construction and are assembled in a dust-proof, oil-tight gear case. The leveling mechanism is controlled by means of a lever conveniently located on the operator's platform.

Straw Handling Equipment

The No. 51 is regularly equipped with a straw dump consisting of a canvas-covered cubicle with a wood platform bottom that can be tilted to dump the straw in bunches behind the machine. Other straw handling equipment, available on special order, includes a straw spreader attachment and chaff collector.



No. 51 Harvester-Thresher



Illust. 1—The self-contained cleaning unit includes the grain pan (A); grain pan fingers (B), which prevent coarse material blanketing front end of chaffer; adjustable chaffer (C); adjustable chaffer extension (D); and adjustable cleaning sieve (E). (F), indicates the canvas shield which prevents loss of grain at sides.

Self-Leveling Cleaning Unit

An important feature of the No. 51 is the self-contained cleaning unit which is pivotally mounted in the separator. The unit comprises the chaffer and extension, the adjustable shoe sieve (also lower shoe sieve when used), and the cleaning fan. The entire unit, including the fan, is automatically kept level from front to rear by means of a pendulum suspended weight. This assures efficient cleaning regardless of the position of the separator when moving up or downhill. Movement of the cleaning unit does not in any way affect the direction of the air blast with relation to the sieves.

The grain pan is provided with fingers which float out coarse chaff from the grain and thus prevent congestion on the front part of the chaffer sieve. The fingers also enable the air blast to exert a maximum effect, separating the grain from the chaff as soon as the grain leaves the grain pan.

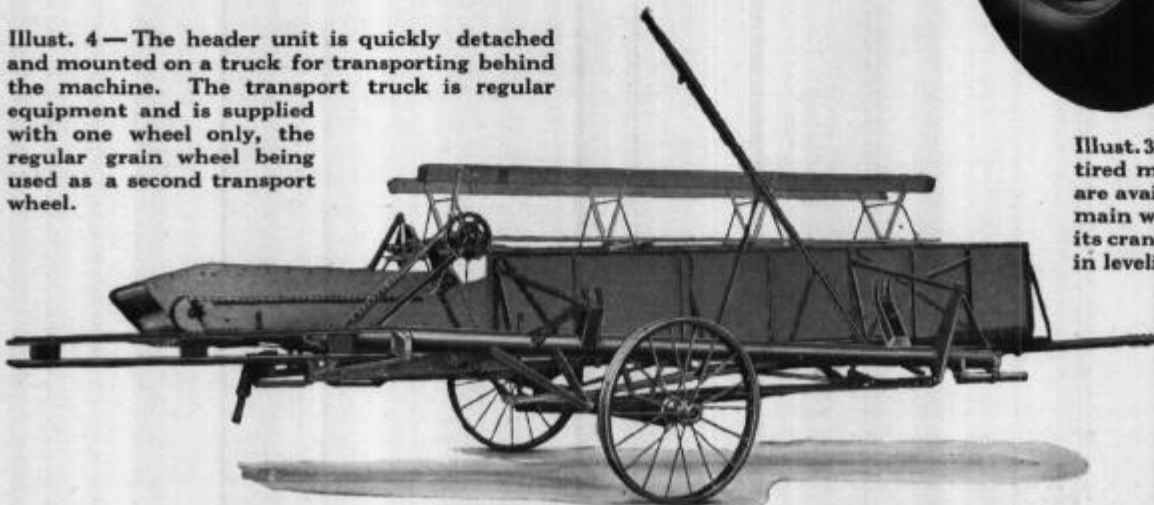


Illust. 2—The self-contained cleaning unit is pivotally mounted in the separator and is held in position by means of a rod extending to a pendulum suspended weight located on the outside of the separator. As the machine moves up or downhill, the pendulum automatically shifts to maintain a true vertical position and thereby tilts the cleaning unit so as to keep it level from front to rear, independent of the position of the separator.



Illust. 3—Special pneumatic-tired main and grain wheels are available. This shows the main wheel for left side with its crank axle mounting used in leveling the machine.

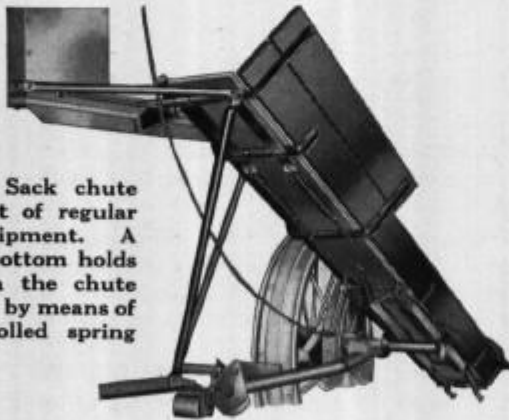
Illust. 4—The header unit is quickly detached and mounted on a truck for transporting behind the machine. The transport truck is regular equipment and is supplied with one wheel only, the regular grain wheel being used as a second transport wheel.



No. 51 Harvester-Thresher



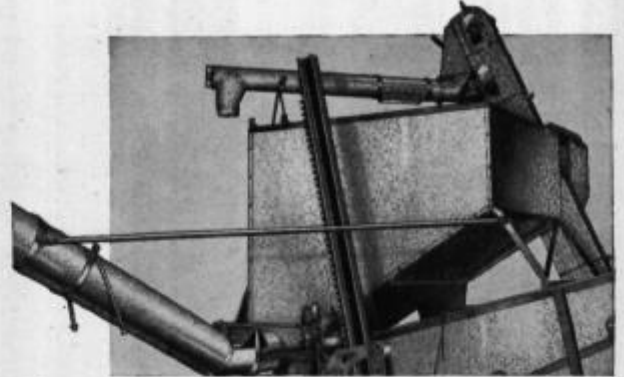
Illust. 1 — The No. 51 is regularly equipped with a combined operator's control platform and bagging platform.



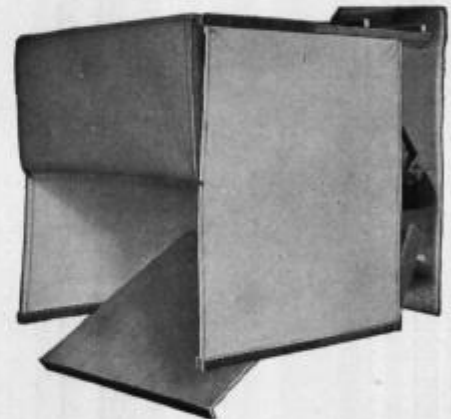
Illust. 2 — Sack chute which is part of regular bagging equipment. A gate at the bottom holds the sacks on the chute until released by means of a rope-controlled spring trip.



Illust. 3 — No. 51 harvester-thresher equipped with special straw hood and straw spreader attachment.



Illust. 4 — A 50-bushel grain tank is available as special equipment. The tank is mounted directly above the separator and is quickly unloaded by means of a big-capacity auger. Delivery can be shifted to the bagging spouts, when desired, by merely turning the adjustable section opening in the spout leading from the grain elevator.



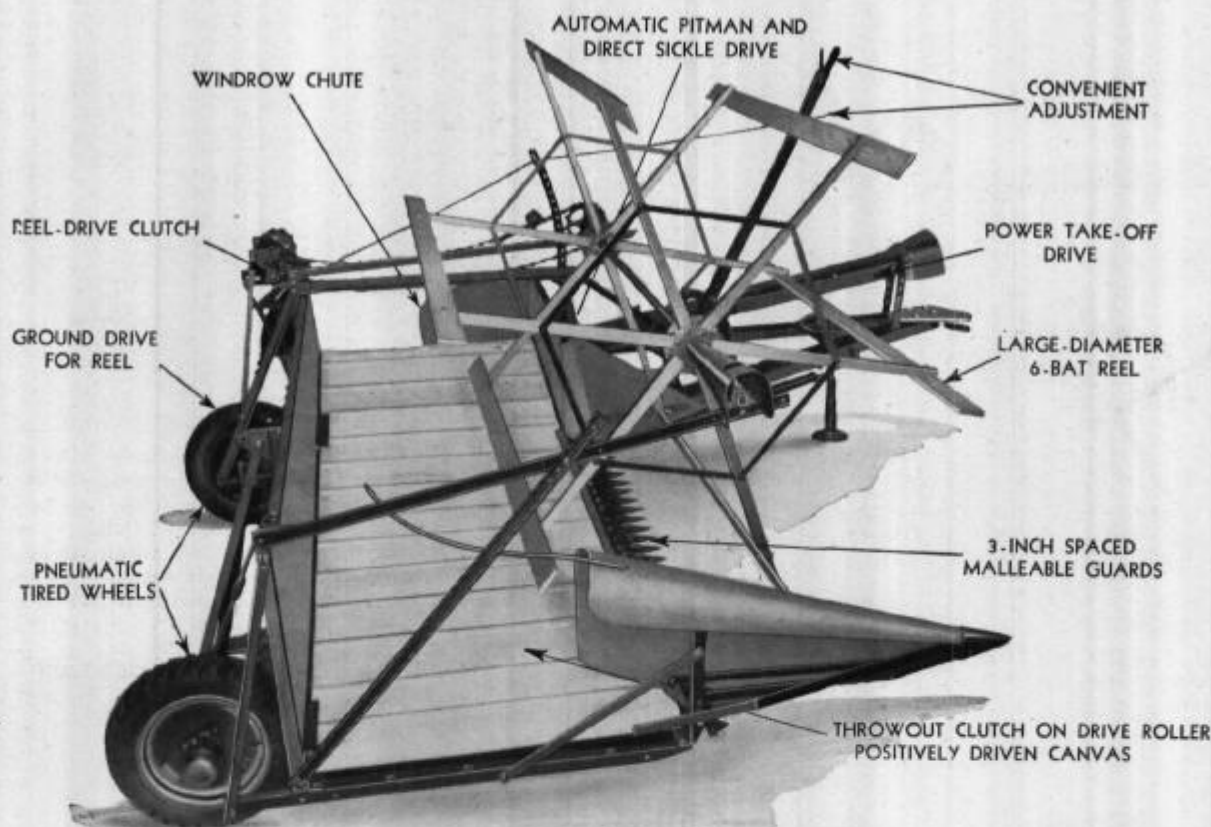
Illust. 5 — A straw dump with tilting bottom is regularly supplied. It deposits the straw in bunches and is controlled by means of a rope from the operator's platform.



Illust. 6 — No. 51 combine shown here equipped with pneumatic-tired wheels, 50 bushel grain tank, straw spreader and chaff collector — all of which are special equipment.



No. 6 Windrower



Illust. 1—End view of No. 6 windrower, 8-ft. size. It is available also in 6-ft. size.

Windrow harvesting is an accepted corollary to combine harvesting when adverse conditions such as extremely weedy crops, uneven ripening or high moisture content preclude direct combining with the harvester-thresher. The windrower cuts the crop and places it in neat, well-formed windrows on top of the stubble. When sufficiently dry, the windrowed crop is then gathered with a pickup-equipped harvester-thresher and threshed.

The No. 6 windrower is available in 6 or 8-foot cutting widths. Its size adapts it particularly to use in conjunction with smaller and medium-size combines. It is power-driven and can be operated easily with small tractors such as Farmalls A and B.

Features

Inside platform delivery—The windrow is formed at the inner end of the platform. The butt deflector is adjustable for regulating wide or narrow windrows. In opening fields the first cut is made as high as possible. The second cut (made in opposite direction) is as low as possible, placing the first windrow on top of the second. Subsequent cuts are then made at normal height.

Delayed clutch, rope-controlled from the tractor seat, stops the action of the platform canvas when turning, thus leaving corners free from grain so that windrow will not be run over when cutting the next swath.

Reel—6-bat, ground-driven; provided with slip clutch. Adjustable forward or back, and up or down.

Tilting lever—easily operated from tractor seat. Lever spring is adjustable to counterbalance the weight of the platform.

Transport—Right wheel is removed and axle (which is pivot-mounted at left end) is swung under platform and secured. Wheel is then replaced. A special transport stub tongue attaches to outer end of platform.

Regular Equipment

Power drive and hitch parts, as ordered. Wheels with pneumatic tires (4.00 x 12-in., 4 ply).

Special Equipment

Rubberized platform canvas. Transport tongue. Lifting jack. Two-foot platform extension (for 6-ft. machine only). Platform tilting springs (for use with 2-ft. platform extension). Reel raising and lowering device. Steel wheels.

Tractor Hitches and Power-Drive Connections (For tractors equipped with standardized power take-off)

ZDA-1465 for tractors with 1 $\frac{3}{8}$ -in. splined take-off shaft.

ZDA-1571 for tractors with 1 $\frac{1}{2}$ -in. splined take-off shaft.

ZDA-1572 for tractors with 1 $\frac{3}{4}$ -in. splined take-off shaft.

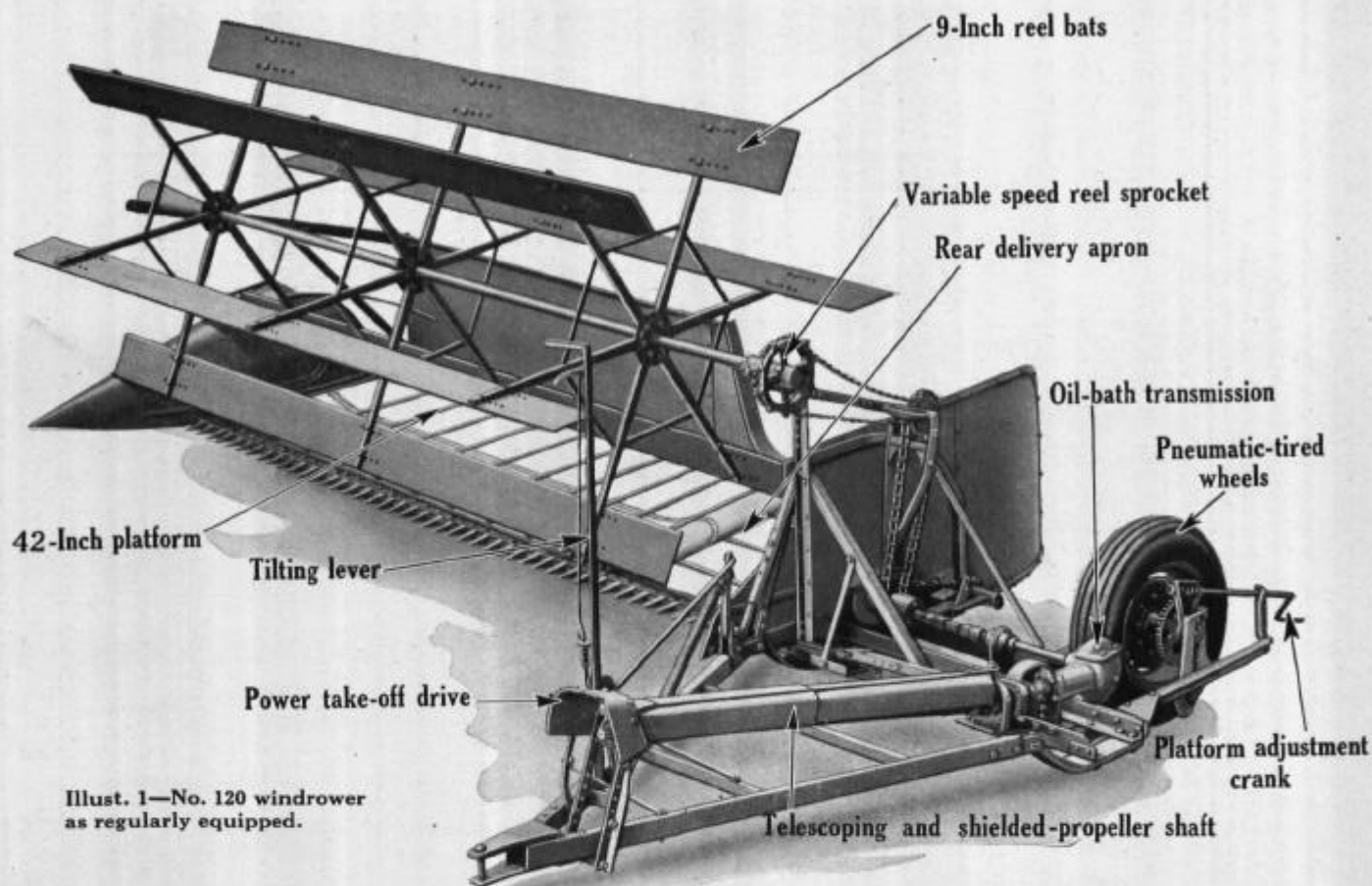
Note: Special conversion packages can be obtained for converting tractors equipped with non-standardized power take-off to A.S.A.E. standards. Power drive hitches, as listed above, can then be used with such converted tractors.

Weights (Approx.)

No. 6 windrower (6-ft.)	883 lb.
No. 6 windrower (8-ft.)	963 lb.



No. 120 Windrower



Illust. 1—No. 120 windrower as regularly equipped.

Windrowing Protects the Grain:

1. When grain is not evenly ripened.
2. When grain fields contain green weed growth.
3. When the crop is ripe but straw is green.
4. When moisture content is too great.
5. When insects or frost endanger standing grain.
6. When shattering danger forces early harvest with large grain acreages.
7. When weather delays combining.
8. Even when ideal crop conditions prevail—maturing in windrows often improves the quality of grain.

The popularity of windrowing before combining is spreading rapidly throughout the country. Farmers are discovering that harvesting by this method protects their grain, permits earlier harvesting, and results in a longer period of usefulness for the combine.

The No. 120 windrower cuts a 12 or 15-foot swath, handling the grain quickly and gently and laying it in well-formed windrows. Its large capacity at relatively high operating speeds and extra-wide platform apron (42 inches) accommodate crops of all heights without distortion in the windrow. Cutting height range, from 3 to 23 inches, is easily adjusted.

Completely power-driven, the No. 120 is adapted for modern tractor power and speeds. It is available as a 12 or 15-foot machine. The 12-foot No. 120 will windrow up to 60 acres per day, the 15-foot up to 75 acres.

Designed for Efficient Operation

Power-Driven Knife, Aprons, and Reel—assure smooth, efficient operation.

Enclosed Power Transmission Gears Operating in Oil—long-lasting, provide maximum power transmission to the main drive cross shaft.

Telescoping Power-Drive Shaft—permits free up-and-down movement, proper tractor drawbar fitting, and smooth, easy operation when turning and over rough ground.

Extra-Wide, 42-inch Platform Apron—properly shielded, provides ample space for tall grains.

12 or 15-foot Cut—available in either size.

Roller Drive Chains—assure smooth power drive, longer, trouble-free operation.

Height of Cut Adjustable—from 3 to 23 inches, makes possible easy cutting of lodged or extremely tall grain.

Hydraulic Platform Lift—available, enables operator to quickly raise or lower cutter bar—effortless, instantaneous, selective.

Rear Delivery—wide, accommodates heavy grains, lays the windrow on stubble, away from the tractor tracks.

Reel Position Adjustable—from 2 to 11 inches in front of the cutter bar, and from just clearing the guards to 15 inches above.

Platform and Reel Shielding—permits the No. 120 to work effectively in wind, prevents grain winding on the shafts.

Capacity—12-foot up to 60 acres a day, and 15-foot up to 75 acres a day at $4\frac{1}{2}$ m.p.h.



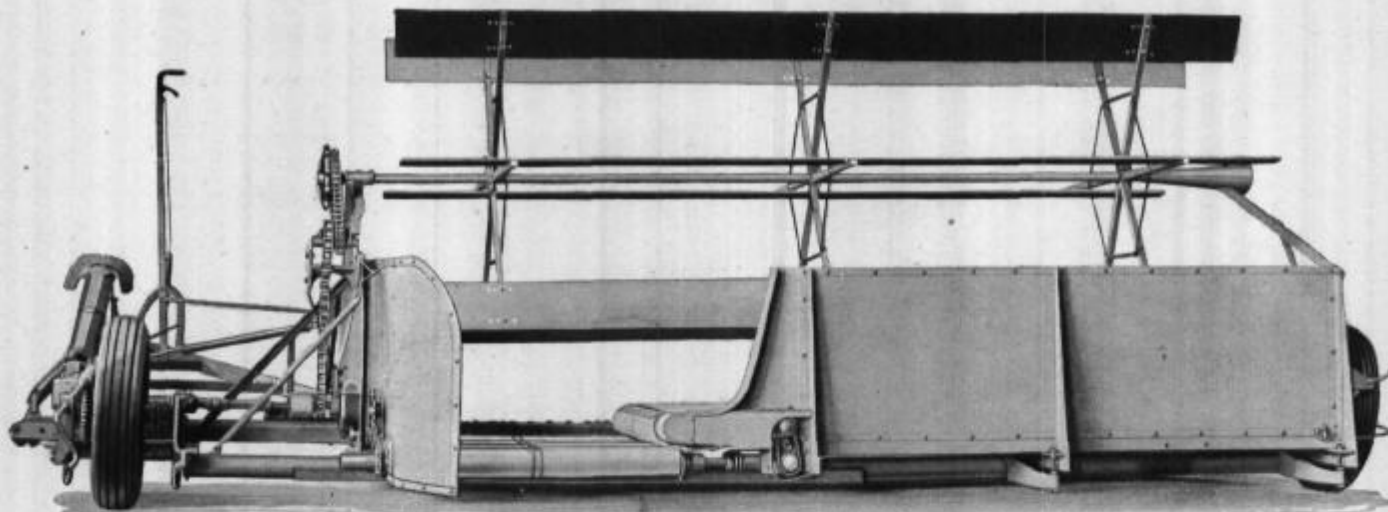
INTERNATIONAL HARVESTER

330-A

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No. 120 Windrower



Illust. 1 — Rear view of the No. 120. Note the wide rear-delivery apron.

For extra-heavy crops, special sprockets may be obtained to speed up the reel, main apron, and rear-delivery apron. Irrigated sections may require the border divider. Power drive and hitch parts are provided for tractors with standardized power take-off. The rear delivery apron with slats on the inside is used when grain tends to wrap or back-feed on the apron. Of general convenience are the trip clutch for apron drives, transport attachment, and the power-lift attachments for tilting the platform. (These last four shown at right.)

Regular Equipment

Manual lift. Pneumatic tires. Six 9-inch reel bats. Reel drive clutch. Sliding propeller shaft and shields.

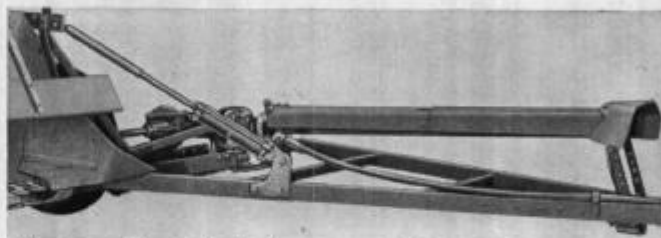
Special Equipment

Transport attachment. Trip clutch for apron drives. Border divider. Power-lift attachment (for use with Farmall H and M tractors equipped with hydraulic Lift-All). Power-lift attachment complete with hydraulic pump (for use with tractors not equipped with Lift-All). Fast speed sprockets. Rear delivery apron with slats on inside. Power drive and hitch parts for tractors with standardized power take-off:

ZDA-1465 for tractors with $1\frac{1}{2}$ -in. splined take-off shaft.
ZDA-1571 for tractors with $1\frac{1}{8}$ -in. splined take-off shaft.
ZDA-1572 for tractors with $1\frac{1}{4}$ -in. splined take-off shaft.

Specifications

	12-foot	15-foot
Number of reel bats.....	6	6
Reel bat width.....	9 in.	9 in.
Reel diameter.....	59 in.	59 in.
Reel height above cutter bar.....	From just clearing guards to 15 in. above	
Knife speed (reciprocations per min.)	1074	1074
Height of cut.....	3 to 23 in.	3 to 23 in.
Platform apron width.....	42 in.	42 in.
Rear delivery apron width.....	42 in.	42 in.
Tire size—main wheel.....	6.00 x 16	6.00 x 16
grain wheel.....	4.00 x 18	4.00 x 18
transport wheel.....	6.00 x 16	6.00 x 16
Overall length—operating.....	13 ft.	13 ft.
Overall width—operating.....	17 ft.	20 ft.
Overall length—transport.....	18 ft. 11½ in.	21 ft. 11½ in.
Overall width—transport.....	9 ft.	9 ft.
Weight.....	1600 lbs.	1850 lbs.



Illust. 2 — Special platform power-lift attachment for use with Farmall H and M tractors equipped with hydraulic Lift-All.

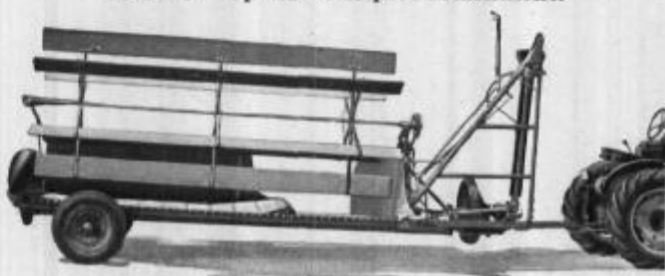


Illust. 3 — Special platform power-lift attachment complete with hydraulic pump, for use with tractors not equipped with Lift-All.



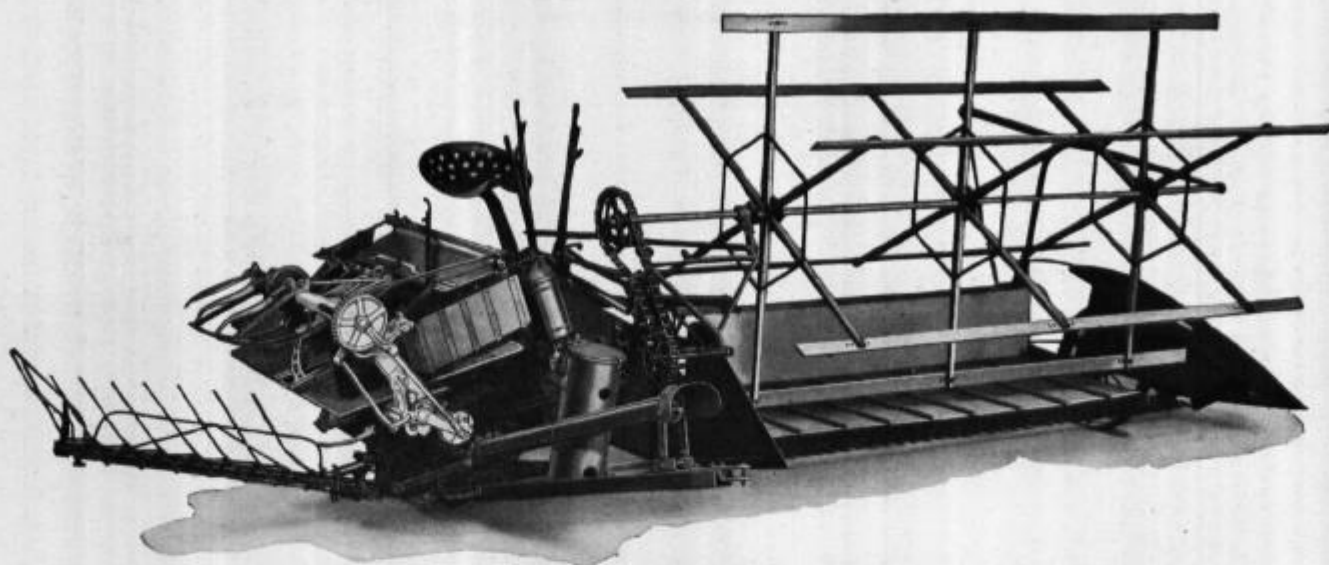
Illust. 4 — The special trip clutch assembly, shown at right, enables the operator to instantly stop aprons at any time. Actuated by rope control. Trip lever (A) engages and disengages clutch (B). This is advantageous in turning corners.

Illust. 5 — Special transport attachment.



Tractor Grain Binder

(No. 4-E)



Illust. 1 — No. 4-E 10-ft. tractor grain binder. Available also in 8-ft. size.

- Uniform operating power for all field conditions.
- Designed throughout for heavy-duty operation at tractor speed.
- One-man control from tractor seat if desired.
- Gears and vital parts enclosed and protected against dirt and trash.
- Big-capacity, accurate-tying binder head.
- Wide range of binder adjustments, easily controlled.
- Suitable hitches for all popular tractors.

The No. 4-E binder is sturdily built for operation at tractor speed. It will handle the heaviest crops, either straight-standing or down and tangled. Its many features, wide cut, and faster operating speed enable owners to bind their crops faster, easier and with less waste. The No. 4-E is available in 10 or 8-ft. cutting widths.

Uniform Operating Power

The binder mechanism is power-driven from the tractor engine, assuring a steady flow of power at all times. The main wheel merely carries the weight of the machine. The power take-off shaft, through which power is delivered, operates at a uniform speed independent of the travel speed of the tractor. This means that the binder mechanism always runs at the proper speed to do good work regardless of whether the tractor is operating in high, intermediate, or low gear. It also permits running the binder mechanism while the tractor is standing still—a desirable feature should momentary clogging occur in extremely heavy growths.

Regular Equipment

Bundle carrier. Steel wheels. Binder with A-frame. For proper tractor hitch and power drive connections see list of Tractor Hitches and Drive Connections.

Special Equipment

One-man control levers for various tractors, as specified. A-frame is special only for T-20 crawler tractor. Tractor hitches. Supplemental outside divider. Flax buncher. Heading attachment. Long seat pipe for tall crops. Large bundle carrier with wheel (steel or pneumatic—4.00 x 18-in. tires) for tall crops. Grain lifters. Reel slip clutch. Rubberized canvasses. Transport with steel or pneumatic-tired (6.00 x 16-in.) wheels and hitch. Pneumatic-tired main wheel (7.50 x 16-in.)—grain wheel (4.00 x 18-in.).

Tractor Hitches and Drive Connections

(For tractors equipped with standardized power take-off)

ZDA-1465 for tractors with $1\frac{3}{8}$ in. splined take-off shaft.
ZDA-1571 for tractors with $1\frac{1}{2}$ in. splined take-off shaft.
ZDA-1572 for tractors with $1\frac{3}{4}$ in. splined take-off shaft.

Note: Special conversion packages can be obtained for converting tractors equipped with non-standardized power take-off to A.S.A.E. standards. Power-drive hitches as listed above, can then be used with such converted tractors.

Specifications and Weights

Size	Description	Net Weight (Approx.)
8-ft.	No. 4-E binder with regular equipment less tractor hitch.....	*1861 lb.
10-ft.	No. 4-E binder with regular equipment..	*1931 lb.
	One-man control levers	115 lb.
	Transport with steel wheels	130 lb.

* For tractor hitch add approx. 86 lb. For A-frame and drive connection (for T-20 crawler tractor only) add approx. 255 lb. For pneumatic-tired wheels deduct 21 lb.

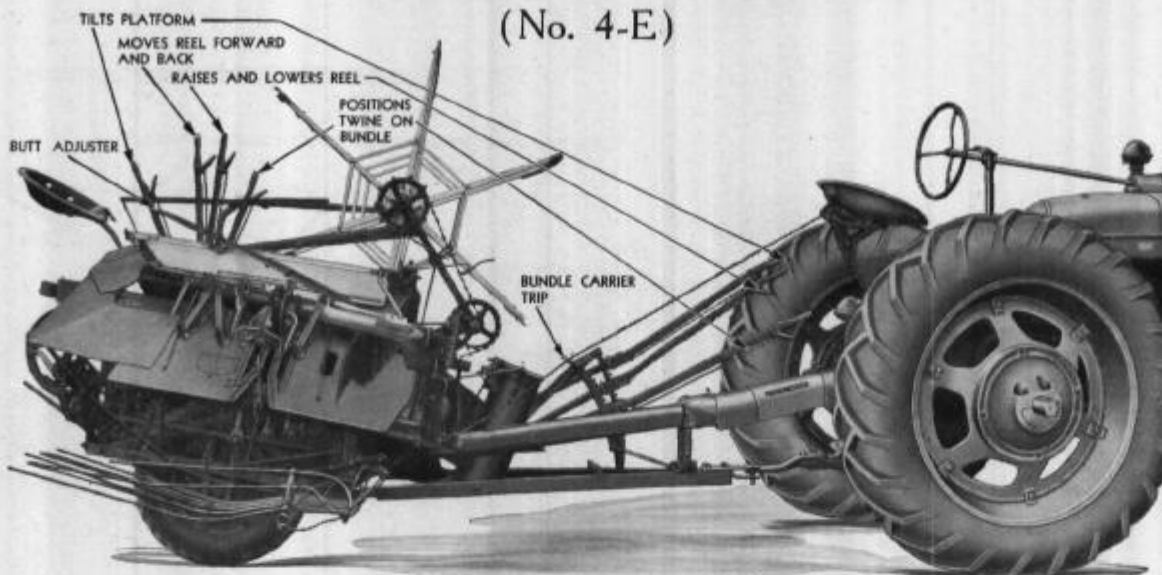


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Tractor Grain Binder

(No. 4-E)



Illust. 1 — Right side of tractor binder equipped with special pneumatic tires, one-man control levers, and discharge arm stripper attachment for handling tangled or viny material. The one-man control levers shown, operate independently of the regular control levers on binder.

Main Frame and Platform

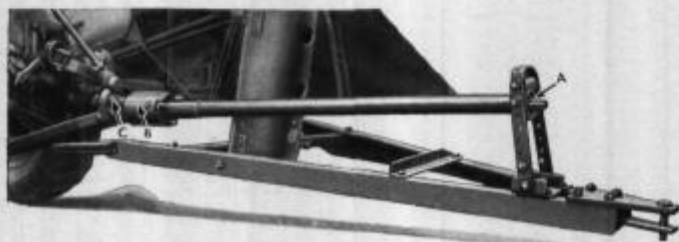
Main frame of flat-steel bars, hot-riveted and braced to resist twisting. Platform of angle steel with heavy, sheet-steel bottom. Heavy diagonal brace, adjustable to keep outer end of platform in alignment. Cutter bar, non-sag, Z-shaped. Knife sections heat-treated and have serrated edges. Guards are malleable with replaceable steel ledger plates. Automatic pitman knife head connection.

Main and Grain Wheels

Main wheel with wide, concaved steel tire, regular. Pneumatic-tired main wheel with 7.50 x 16-in., 4-ply tire, special. Replaceable hub. Two high-grade roller bearings and two thrust ball bearings. Main wheel adjustable for raising or lowering binder. Grain wheel with correct pitch and gather. Steel grain wheel, regular. Pneumatic-tired grain wheel with 4.00 x 18-in., 4-ply tires, special.

Bearings

High-grade bearings at all important friction points. All bearings equipped for pressure-gun lubrication.



Illust. 2 — This shows the hitch and power drive for tractors having standardized power take-off. The front power drive connection (not shown) will vary according to the tractor used. (A) indicates ball bearing, (B) slip clutch, (C) universal joint.

Enclosures at Many Points

Enclosures are provided for the following: front elevator bracket and gears, butt adjuster driving gears, reel drive gears (upper and lower), needle pitman bearings, packer crank box (front), and trip dog pinion. These enclosures afford protection against dirt and wear, assuring long life and smooth operation.

The Reel

Wide range of reel adjustments, ample for all crops and conditions. Flexible chain drive. Reel drive gears enclosed. Outer end reel support. Rod-and-chain device keeps both ends of reel parallel with cutter bar throughout adjustment range. Reel slip clutch, extra.

Force-Feed Elevator

Ample capacity for heaviest yields. Upper elevator equipped with large-diameter lower roller. Force-feed delivery handles any volume without waste or clogging. Elevators rigidly braced, provided with adjustments for keeping square. Roller bearings, pressure-gun lubricated.

One-Man Control Levers

Permit tractor driver to control binder. Supplied special. Levers conveniently located on A-frame, close to operator. Levers adjustable for length. Bundle carrier trip is rope-controlled. When ordering one-man control hitch and levers, specify tractor used.

Hitches for All Popular Tractors

The No. 4-E binder can be used with virtually all popular makes of tractors. Suitable hitches and drive connections are available for tractors equipped with standardized power take-off. For older tractors equipped with non-standardized take-off, special conversion packages are usually obtainable from the manufacturer permitting the tractor to be converted to A.S.A.E. standards.

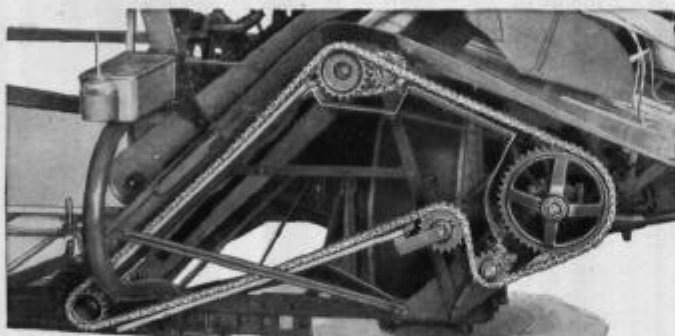


Tractor Grain Binder

(No. 4-E)

Heavy-Duty Binder Head

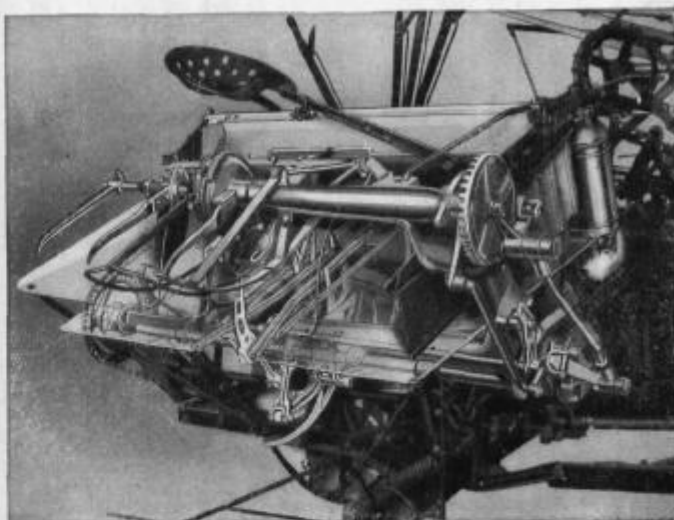
The heavy-duty binder head is especially designed for tractor operation. It has ample capacity and is geared (2 to 1 ratio) to handle the heaviest grain flow resulting from tractor operation. Enclosures for gears, cams, and other vital points afford protection against dirt and wear, assuring smooth operation and long life. The packer shaft is drop-forged steel with precision-ground bearing surfaces. The packer arms are malleable, with hardened steel bearings that are adjustable for wear and can be replaced easily and economically. The knotter is reliable, simple in construction and is easy to adjust when necessary. All parts over which the twine runs are heat-treated to resist wear. The twine slack lever maintains an even twine feed to the needle. This type of feed control is desirable for the faster tying speeds of tractor-operated binders. The butt adjuster is made of waterproof canvas belting with hardwood slats. This rotary type adjuster is especially effective for high speed work in forming square-butted bundles.



Illust. 1—The roller-chain main drive provides a uniform flow of power to the binding unit, and platform and elevator rollers.



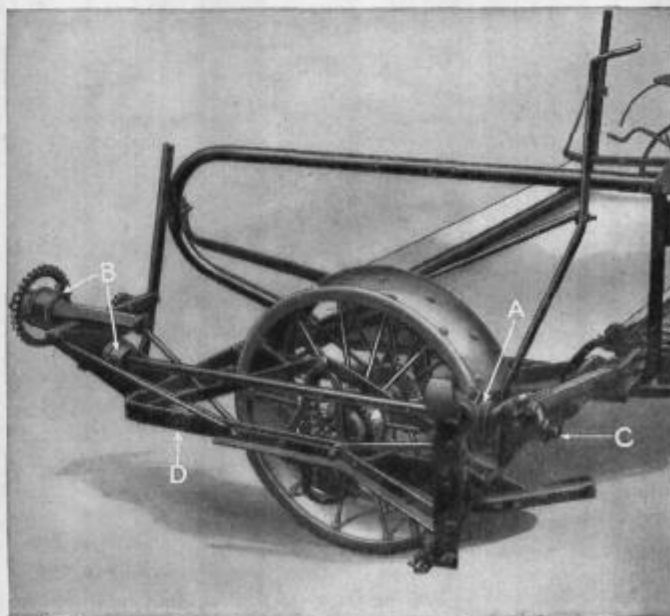
Illust. 2—For transport, the outside divider is folded and special stub tongue is attached to outer end of platform, as shown. The transport wheels (not shown) are placed underneath the main frame and the main wheel is raised clear of ground.



Illust. 3—The binding mechanism of the tractor binder is of rugged construction to handle the heavy grain flow resulting from operations at tractor speed. The steel deck (shown in phantom) has a steep slope so that choking underneath the deflector is avoided.

Roller Chain Main Drive

Power is transmitted from the drive shaft sprocket, at the rear of the machine, through a heavy-duty roller chain to the platform and elevator rollers and to the binding unit. (The knife pitman is driven directly from the power shaft.) This roller chain rolls smoothly over the drive sprockets, with minimum friction and wear and maintains its original length even after long periods of hard use.



Illust. 4—Note the sturdy construction of the main frame, platform, and main wheel. (A) and (B) indicate roller bearing boxes, (C) knife pitman crank, and (D) main frame.



Binder Twine



Illust. 1 — The big 8-pound ball is reinforced with a self-supporting cover which helps to hold the ball in shape. The fiber is treated to protect it against destruction by insects.



Illust. 2 — The self-supporting crisscross cover does not collapse so that tangling is avoided. The twine runs out smoothly to the last foot.

Patented Crisscross Cover

International Harvester binder twine differs from many other brands in that it has a self-supporting crisscross cover with an opening at the top (see Illust. 1). This is an exclusive IH feature. It permits winding the cover at a greater angle to the sides of the ball so that the cover remains upright and supports the ball until the last foot of twine is run out. Furthermore, the opening or uncovered top area permits the upper ball in the twine can to set down slightly into the lower ball thus preventing the twine inside the lower ball from tangling.

IH twine is guaranteed to be the full length specified and of ample strength to bind any crop harvested with binders. Careful selection of quality material, modern manufacturing processes, and a rigid system of inspection assure that each pound of binder twine will both feed and tie uniformly to give satisfactory service.



Illust. 3 — The 48-pound (net weight) bale contains 6 balls. The bale is firmly tied with rope which is strong enough for many uses.

What Twine Users Should Know—

- Twine is purchased by the pound and is used by the foot.
- Twine that is thick, uneven or buncchy may register full weight and yet be short in length.
- Such twine will tie fewer bundles per ball.
- IH binder twine is uniform throughout.
- It is guaranteed for length and strength.
- It is made of long, high-quality fiber.
- It is produced by skilled workmen using the finest twine-making machines.
- It is carefully spun and inspected at every step.
- The fiber is treated for protection against rot, mildew, and pests.
- The exclusive crisscross cover protects the ball in handling and avoids tangling while the twine is being used.
- Because IH binder twine gives full value it is the most economical to use.

Specifications

Average length of twine, feet per pound.....	500 ft.
Average tensile strength.....	90 lb.
Net weight of bale (6 balls).....	48 lb.



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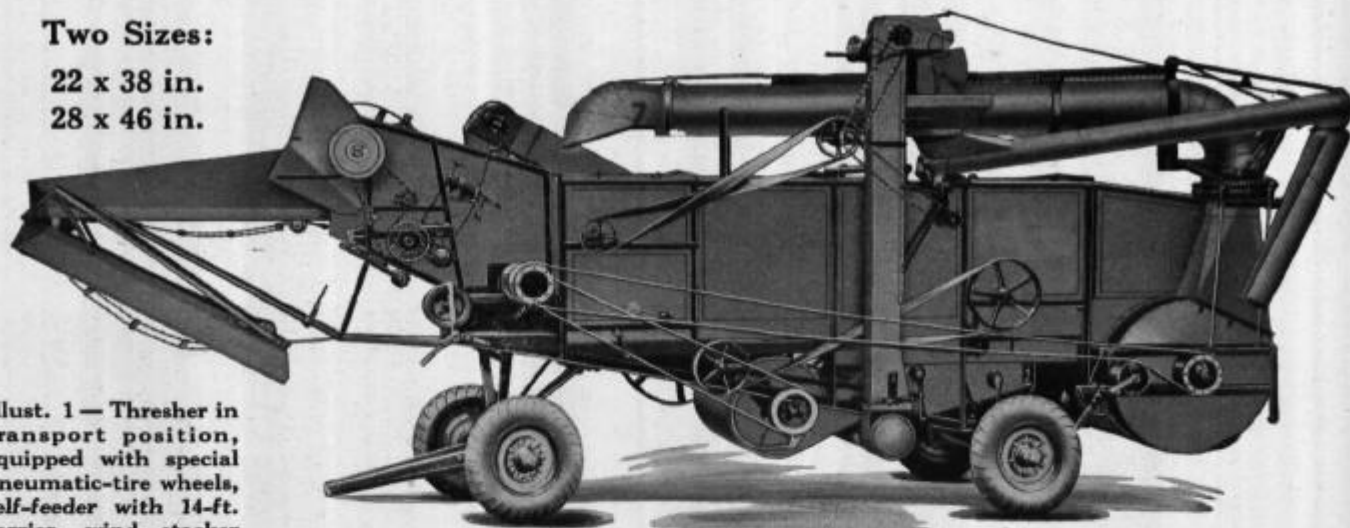


Stationary Grain Threshers

Two Sizes:

22 x 38 in.

28 x 46 in.



Illust. 1—Thresher in transport position, equipped with special pneumatic-tire wheels, self-feeder with 14-ft. carrier, wind stacker and Hart Perfection weigher.

These machines offer the utmost in clean threshing and grain-saving ability. They are thoroughly modern—smooth running, easily operated, and sturdily built for years of satisfactory service. Available in two popular sizes—22 x 38 in. and 28 x 46 in.—to match the power of tractors in general use and to meet the needs of individual, neighborhood, and custom threshing.

Regular Equipment

Combination tongue and stub pole. Self-feeder with 9-ft. carrier. Wind stacker. All belts except main drive belt to engine. Rockwood pulleys on cylinder shaft, cleaning fan, and wind stacker fan. Belt reel. Adjustable chaffer sieve and extension. One adjustable shoe sieve for all grains. One triangular weed screen for shoe bottom (when stated on original order, one flax, timothy, or any other one sieve in place of weed screen).

Special Equipment

Hand feeder. Rake stacker. Self-feeder with 14-ft. carrier. No. 1 Hart Perfection weigher with 9-ft. swinging tilting conveyor

and wagon spout. No. 2 Hart Perfection weigher with 6-ft. swinging conveyor and wagon spout. No. 3 Hart Perfection weigher with stationary cross conveyor and two wagon spouts. No. 11 Hart Perfection loader with 9-ft. swinging tilting conveyor and wagon spout. No. 12 Hart Perfection loader with 6-ft. swinging conveyor and wagon spout. No. 13 Hart Perfection loader with stationary cross conveyor and two wagon spouts. Short elevator bagger with or without tally. Spokane (rice) type bagging spout, with or without tally. Standard Hart bagging spout, with or without tally. Hand measure delivery spout. Pea, bean, and soybean attachment (400 r.p.m. cylinder speed). Pea, bean, and soybean attachment (600 r.p.m. cylinder speed). Gylinder speed-reducing counter-shaft attachment, 400 r.p.m. (special sprockets for 275 and 600 r.p.m. when specified). Special sprockets for increasing speed of shaker pan and retarder (for extremely brittle straw conditions). Kafir corn attachment. Alfalfa attachment. Clover attachment. Recleaner for alfalfa, clover, etc. Special recleaner sieves. Special shoe sieves for flax, timothy, lespedeza, orchard grass, sorghums, etc. Wind-stacker oscillating attachment. 4-ft. extension for wind-stacker pipe. Brake attachment. Rear end hitch. Wheels with 8-in. tires. Pneumatic tire wheels. Rockwood cylinder pulleys—7, 8, 9, 10, 11, 12, 13, and 14-in. diameter, 8½-in. face. Divider for 28-in. thresher. Special chaffer sieve.

Specifications

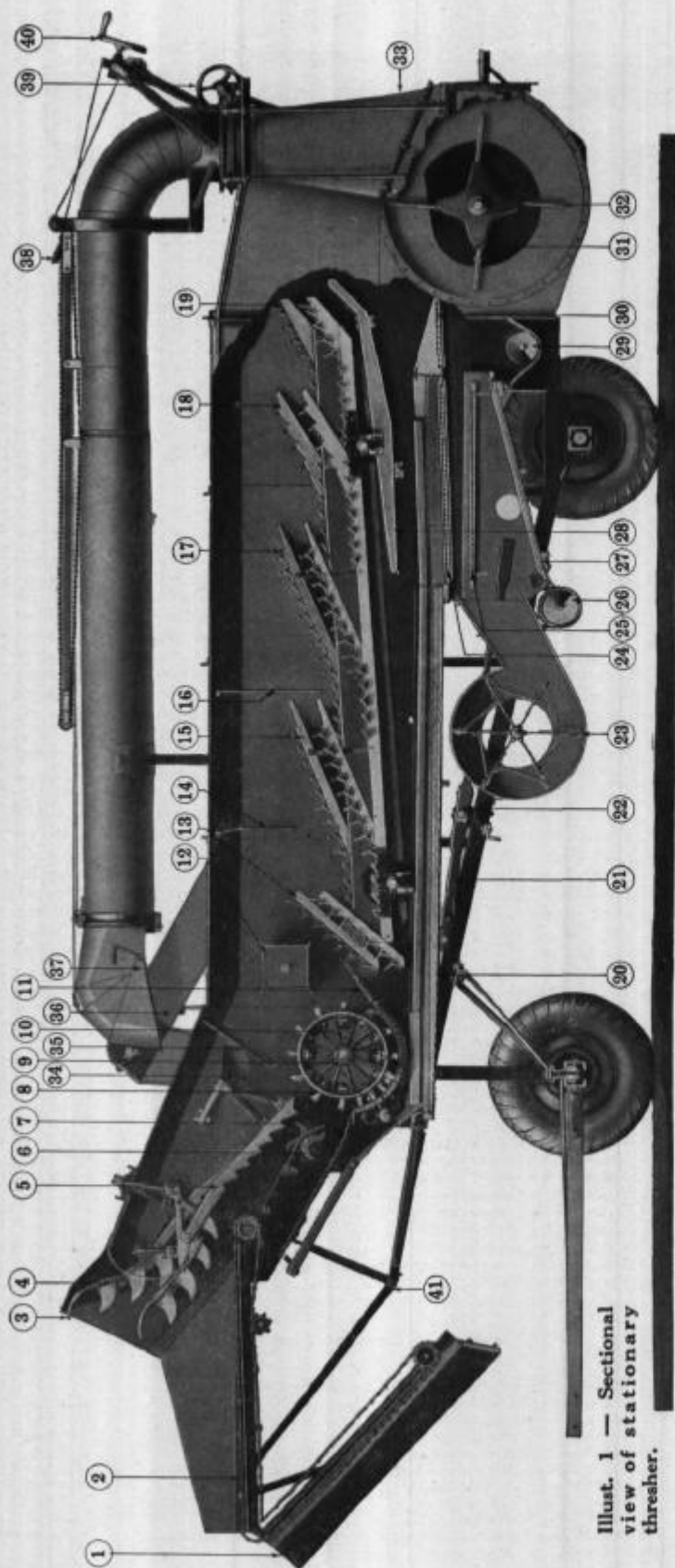
	22 x 38	28 x 46
Width of cylinder.....	22 in.	28 in.
Width of separator inside.....	38 in.	46 in.
Number of bars in cylinder.....	12	12
Number of teeth in cylinder.....	72	92
Diameter of cylinder including teeth.....	21½ in.	21½ in.
Speed of cylinder: r.p.m.....	1100	1100
Diameter of cylinder shaft.....	2 in.	2 in.
Cylinder shaft bearings.....	Ball	Ball
Length of grate surface.....	33 in.	33 in.
Diameter main drive pulley regularly supplied.....	9½ in.	9½ in.
Face main drive pulley.....	8½ in.	8½ in.
Length of straw racks on straight line.....	10 ft. 10 in.	10 ft. 10 in.
Length of grain pan, chaffer, and chaffer extension.....	13 ft. 2 in.	13 ft. 2 in.
Straw rack surface, square feet.....	34½	41½
Chaffer surface, square feet.....	13.1	16.1
Each sieve surface, square feet.....	9.5	11.75
Length with self-feeder and wind stacker (folded).....	23 ft.	23 ft.
Height of machine at rear (over stacker pipe).....	9 ft. 5 in.	9 ft. 5 in.
Height of machine at deck.....	7 ft. ¾ in.	7 ft. ¾ in.
Height of front wheels.....	30 in.	30 in.
Width of front wheels.....	6 in.	6 in.
Height of rear wheels.....	30 in.	30 in.
Width of rear wheels.....	6 in.	6 in.
Tread of front wheels.....	54 in.	54 in.
Tread of rear wheels.....	76 in.	84 in.
Diameter of wind stacker pipe, inside.....	12½ in.	12½ in.

	22 x 38	28 x 46
Length of wind stacker pipe, extended.....	18 ft. 3 in.	18 ft. 3 in.
Height of 9-ft. feeder carrier—low adjustment.....	5 ft. 6 in.	5 ft. 6 in.
Height of 9-ft. feeder carrier—high adjustment.....	6 ft.	6 ft.
Height of 14-ft. feeder carrier—low adjustment.....	3 ft. 11 in.	3 ft. 11 in.
Height of 14-ft. feeder carrier—high adjustment.....	6 ft. 8 in.	6 ft. 8 in.
Capacity, bu. per hour—Wheat.....	65 to 130	80 to 160
Capacity, bu. per hour—Oats.....	110 to 220	140 to 280
Horse power required to operate: With hand feed and folding stacker.....	16	22
With wind stacker, self-feeder and weigher.....	20-30	30-40

Weight of Threshers and Attachments

	22 x 38	28 x 46
Thresher, fully equipped with self-feeder, wind stacker, and Hart Perfection weigher.....	5,390 lb.	5,780 lb.
Self-feeder with regular 9-ft. carrier.....	755 lb.	885 lb.
Self-feeder with 14-ft. carrier.....	895 lb.	1,030 lb.
No. 1 Hart Perfection weigher.....	.....	395 lb.
No. 2 Hart Perfection weigher.....	360 lb.	.....
No. 3 Hart Perfection weigher.....	386 lb.	393 lb.
No. 11 Hart Perfection loader.....	304 lb.	304 lb.
No. 12 Hart Perfection loader.....	283 lb.	283 lb.
No. 13 Hart Perfection loader.....	290 lb.	296 lb.
Short elevator and bagger.....	172 lb.	172 lb.
Wind stacker.....	1,175 lb.	1,300 lb.

Stationary Grain Threshers



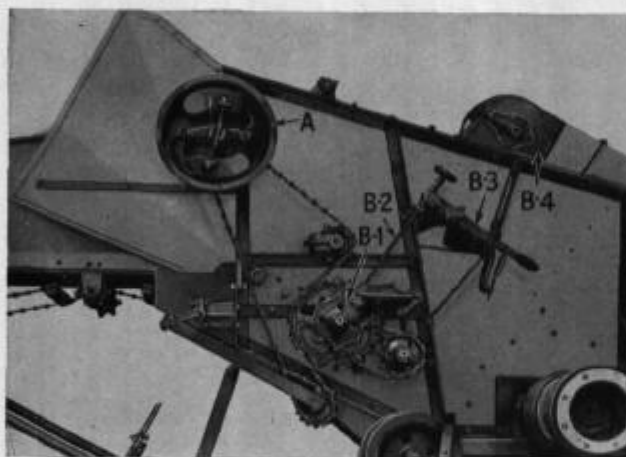
Illust. 1 — Sectional view of stationary thresher.

1. Feeder carrier. One man can fold it.
2. Feeder conveyor. Steel chains and hardwood slats.
3. Hooks on knife arms. Help to carry grain into feeder.
4. Band cutting knives with serrated edges.
5. Fishbacks. Comb grain to cylinder. No turns to obstruct passage.
6. Retarders. Hold lower part of bundle while top is combed off by fishbacks.
7. Shaker pan. Saves grain threshed out in feeder.
8. Cylinder. Steel bars set in cast heads. High-grade teeth. Ball bearings.
9. Toothed concaves. Adjustable for cylinder clearance.
10. Concave grate. Interchangeable with toothed sections.
11. Bar and finger grate. Major portion of grain is separated here and at concave grate by centrifugal force.
12. Beater. Directs straw down onto straw rack. Prevents straw from following cylinder.
13. First straw rack riser. Gives 10-inch drop. Assists separation. Adjustable.
14. Steel check flap. Adjustable.
15. Second straw rack riser.
16. Canvas check flap.
17. Third straw rack riser.
18. Steel pins in risers. Help to tear straw apart.
19. Fourth straw rack riser. All risers have same function of tossing and dropping straw.
20. Grain pan. Receives grain separated at concave and straw rack. Passes it on to chaffer. Corrugated steel bottom.
21. Hardwood pitman. Operates grain pan and chaffer. Roller bearing.
22. Hardwood pitman. Operates cleaning shoe. Roller bearing.
23. Cleaning fan. Steel blades. Roller bearings. Air blast adjustable.
24. Chaffer. Adjustable for all grains and seeds.
25. Shoe sieve. Adjustable for all grains and seeds.
26. Grain auger. Delivers to grain elevator.
27. Weed screen. Gives grain final cleaning. Eliminates weed seeds.
28. Return pan. Delivers grain separated at rear of straw rack to front of chaffer.
29. Tailings auger. Delivers unthreshed heads to tailings elevator, thence back to cylinder.
30. Chaffer extension. Openings and angle adjustable.
31. Wind stacker. Located outside of thresher to give clear passageway for straw.
32. Wind stacker fan with offset blades. Roller bearings.
33. Stacker pipe. Removable section gives access to fan and elbow.
34. Tailings spout. Delivers tailings from elevator onto distributor.
35. Tailings distributor. Distributes tailings evenly across cylinder front where it is cushioned by incoming grain.
36. Tailings elevator. Steel chain with wood flights.
37. Stacker hood. Adjustable from turret end.
38. Adjusting crank. For extending stacker pipe.
39. Handwheel. For moving stacker pipe sideways.
40. Handwheel. For raising and lowering stacker pipe.
41. Feeder support. Permits adjustment of carrier for height.

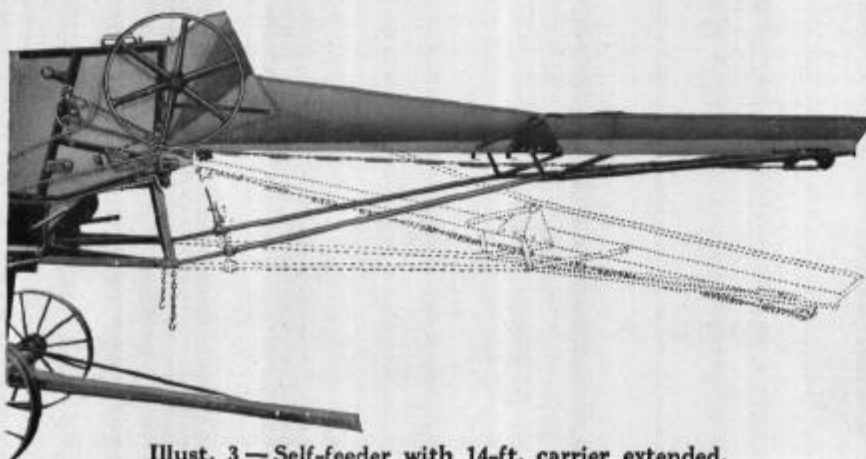
Stationary Grain Threshers



Illust. 1—Front view of the single crank feeder, showing the knife arms and feeding pans.



Illust. 2—(A) is flyball governor which permits carrier to operate only when cylinder is running at normal speed. Should the feeder become overloaded the volume governor (indicated by (B) component parts) stops the carrier. (B-1), trip clutch; (B-2), arm; (B-3), lever for changing trip clutch setting; (B-4), adjusting rod for setting.



Illust. 3—Self-feeder with 14-ft. carrier extended. Illustration shows carrier raised to highest working position, while dotted outline shows lowest position. Adjustments in height are quickly made by means of a ratchet screw adjustment.

Single-Crank Self-Feeder

The self-feeder is of the single-crank type, highly efficient. It is exceptionally sensitive to variations in cylinder speed and volume of grain, automatically adjusting itself so as to regulate the flow evenly to the threshing cylinder.

As the bundles move into the feeder they are brought in contact with reciprocating knives which cut the bands and spread the grain evenly across the mouth of the feeder. Hook-tooth retarders hold back the bottom part of the bundles, while the top is combed off by the fishbacks and is passed to the cylinder in a uniform flow. The grain is fed high to the cylinder to assure ample threshing action and prevent choking.

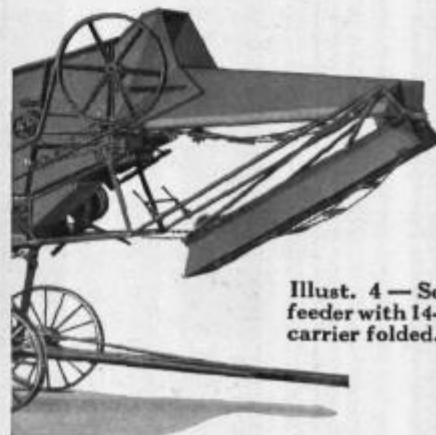
Two Governors

The feeder is equipped with two governors—one controlled by the speed of the cylinder and the other by the volume of grain entering the feeder throat. When the cylinder speed falls below normal, the speed governor instantly stops the carrier and prevents the bundles from moving forward. When the cylinder speed again becomes normal, the flyball clutch is automatically engaged and movement of the carrier is resumed.

The volume governor trip clutch is so arranged that it can be adjusted from the top of the feeder and its setting changed while the machine is in operation. Should the feeder become overloaded, the fishbacks rise and disengage the clutch, thus stopping the carrier.

Two Sizes of Carriers

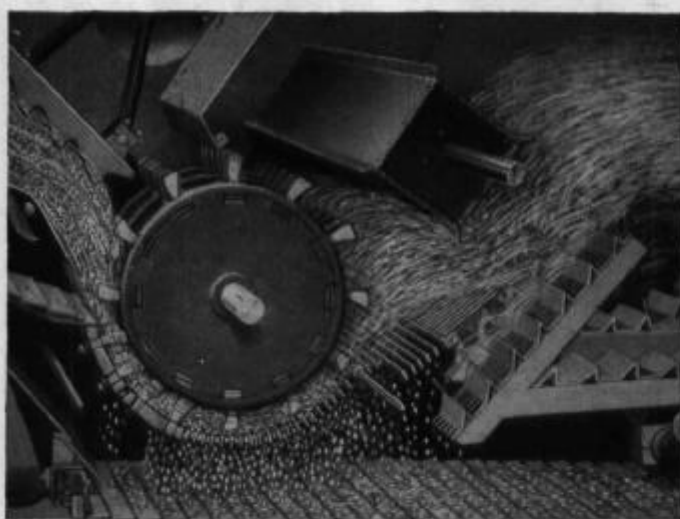
Feed carriers are available in two sizes—9 and 14 ft. lengths. The 9-ft. carrier is standard equipment while the 14-ft. carrier is supplied special. In large threshing operations the longer carrier saves considerable time and labor. It also permits two men to feed the machine from opposite sides with less likelihood of piling the bundles on top of each other.



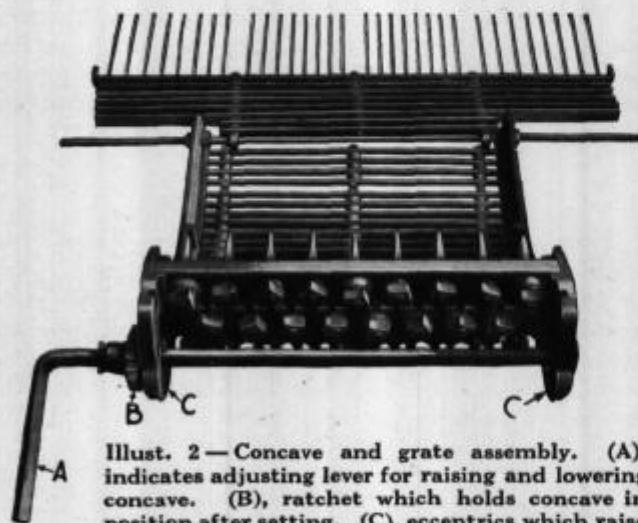
Illust. 4—Self-feeder with 14-ft. carrier folded.



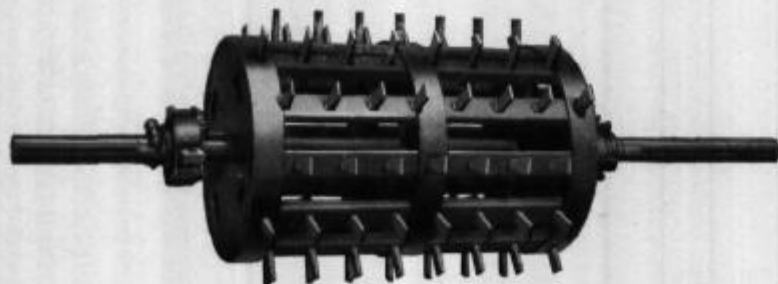
Stationary Grain Threshers



Illust. 1 — Cross-sectional view showing threshing action at cylinder and concave. Grain is fed in an even stream to the cylinder where it passes between the moving teeth of the rapidly revolving cylinder and the stationary teeth of the concave. This action loosens the kernels from the heads, so that they can be readily separated from the straw.



Illust. 2 — Concave and grate assembly. (A), indicates adjusting lever for raising and lowering concave. (B), ratchet which holds concave in position after setting. (C), eccentrics which raise and lower concave slides. The bar grate is directly behind the concave and forms an arc with it. Steel fingers are attached to the rear of the beater grate.



Illust. 3 — Cylinder used in 28 x 46-in. thresher. It has 92 teeth. Cylinder for 22 x 38 in. thresher has 72 teeth.

Ball Bearing Cylinder

The cylinder is ruggedly constructed and revolves on ball bearings. Twelve double steel bars are fitted into recessed cast-iron heads in the form of a drum. Heavy steel bands are then shrunk over each head and center casting to prevent the bars from working loose. The cylinder teeth are fitted into square holes in the bars and are rigidly bolted in place. The cylinder shaft is accurately machined to size and the completed cylinder is carefully counterbalanced so that it will run smoothly without destructive vibration.

The cylinder teeth are forged from high-grade steel and are carefully tempered. The threshing edges are hardened to resist wear, while the shank and body of the teeth remain tough to avoid breakage. Cylinder teeth and concave teeth are interchangeable.

Concave Easily Adjusted

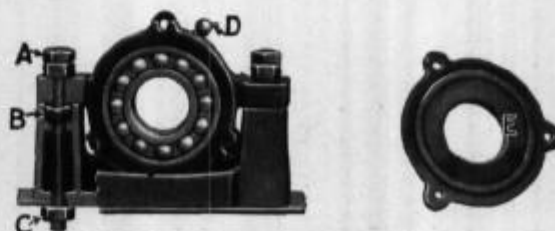
The concave is adjustable to obtain the proper clearance between the teeth in the cylinder and those in the concave for different threshing conditions. Lateral adjustments are made by means of set screws located on the sides of the cylinder supports. Up-and-down adjustments are made with a lever. This lever operates the eccentrics under each concave slide so adjustments are uniformly made at the rear as well as the front of the concave. A pawl and ratchet hold the concave in position.

Concave Equipment

The concave equipment regularly supplied consists of two sections with teeth and two blank sections. Sufficient teeth to fill a third section are also included.

The Grate

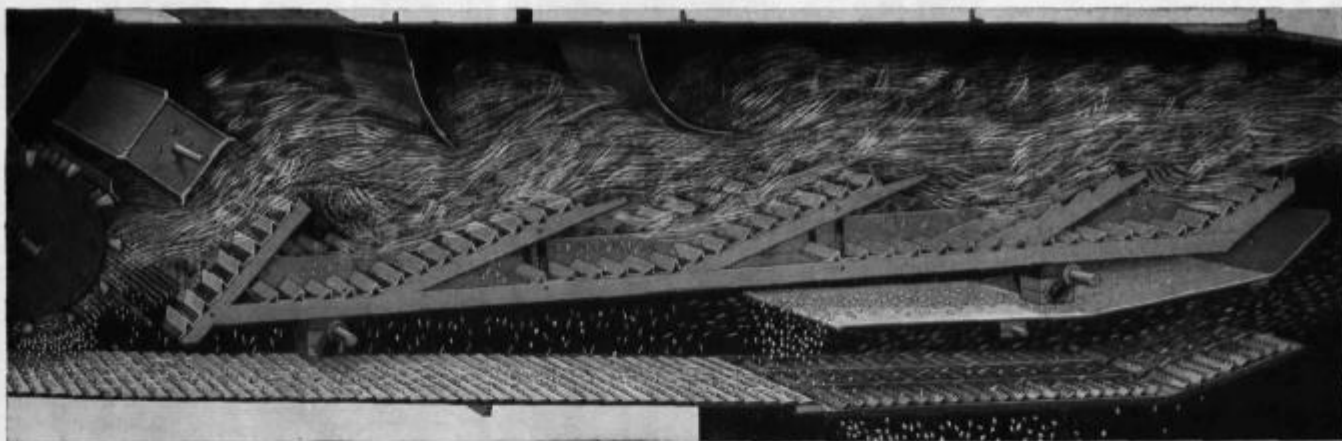
The grate consists of parallel bars bolted together and with openings between them through which a large portion of the threshed grain is driven by the centrifugal force of the cylinder. Steel fingers at the rear of the beater grate aid in separation.



Illust. 4 — Sectional view of cylinder ball bearing housing. (A), (B) and (C) show how bearing is bolted to thresher frame. (D), is hydraulic fitting for pressure-gun lubrication. (E), dust-tight bearing cap.



Stationary Grain Threshers



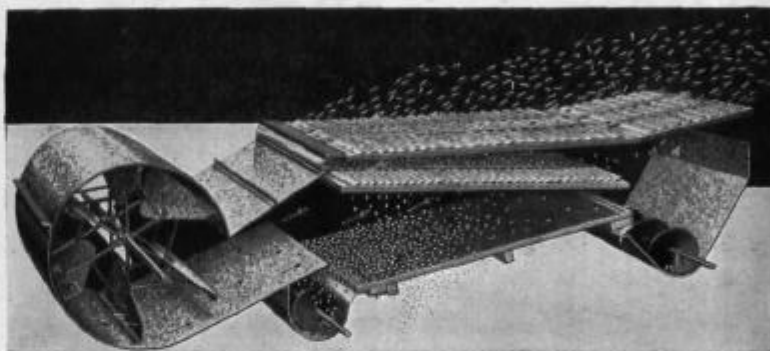
Illust. 1 — Cross-sectional view of thresher interior showing the separating and cleaning action as it takes place at the straw rack and chaffer.

Dual Separation

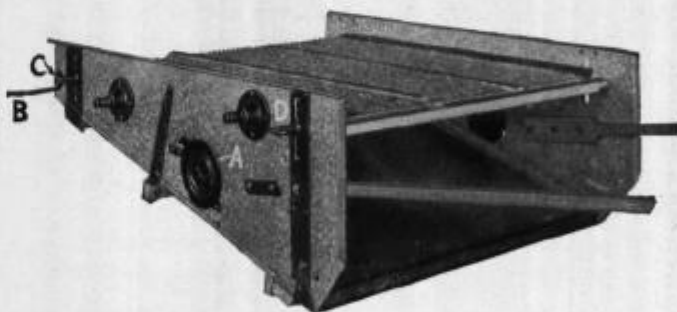
Separation begins at the grated surface underneath the cylinder as soon as the heads are threshed. Here a large portion (ordinarily 80 to 90 percent) of the kernels are separated from the straw by the centrifugal force of the cylinder. The straw and such kernels as remain intermingled with it pass over the grate and onto the straw rack. Here the remaining kernels are shaken out by the action of the straw rack.

Efficient Cleaning

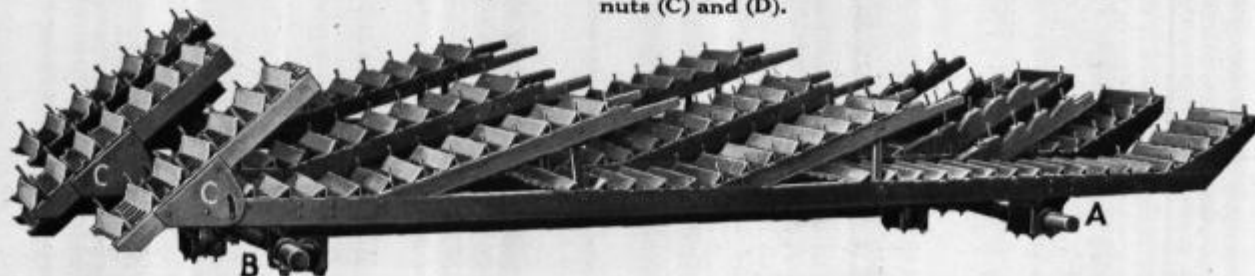
Cleaning is accomplished by passing the chaff-laden grain over a series of moving sieves through which the grain falls while the chaff and refuse are carried over and blown away by a blast of air from the fan. First of these sieves is the chaffer. The function of the chaffer is to separate the grain from the coarser refuse. The grain and remaining refuse then fall upon the shoe sieve for final cleaning.



Illust. 2 — Cross-sectional view of cleaning mechanism showing the action that takes place. The chaffer, chaffer extension and cleaning shoe are adjustable fin type.



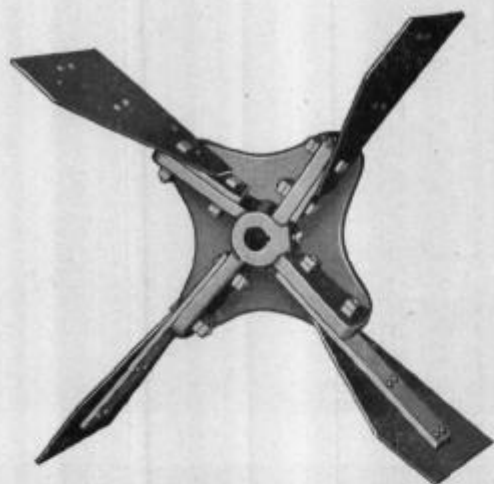
Illust. 3 — Cleaning shoe with sieve in place. The upper shoe sieve is adjustable while the lower is a triangular-hole weed screen. (A) handhole through which operator can reach and clean the sieve while machine is in operation. (B) adjustment for regulating sieve openings. The ends of the sieve can be raised or lowered as required, and are held in position by wing nuts (C) and (D).



Illust. 4 — Four-section straw rack assembly. Each section has four risers which give the straw a 10-in. drop. Note the steel pins which comb the straw apart and assist in separation. (A) and (B) indicate the forged steel crankshafts which revolve on roller bearings. The front risers (C) can be adjusted for long or short straw.



Stationary Grain Threshers



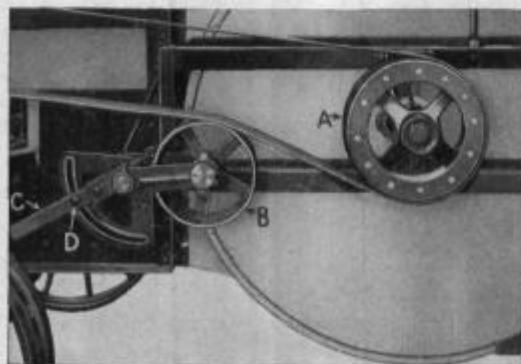
Illust. 1 — The blower fan with its offset blades is constructed to give maximum blast without rubbing the straw against the fan housing.

Powerful Blowers

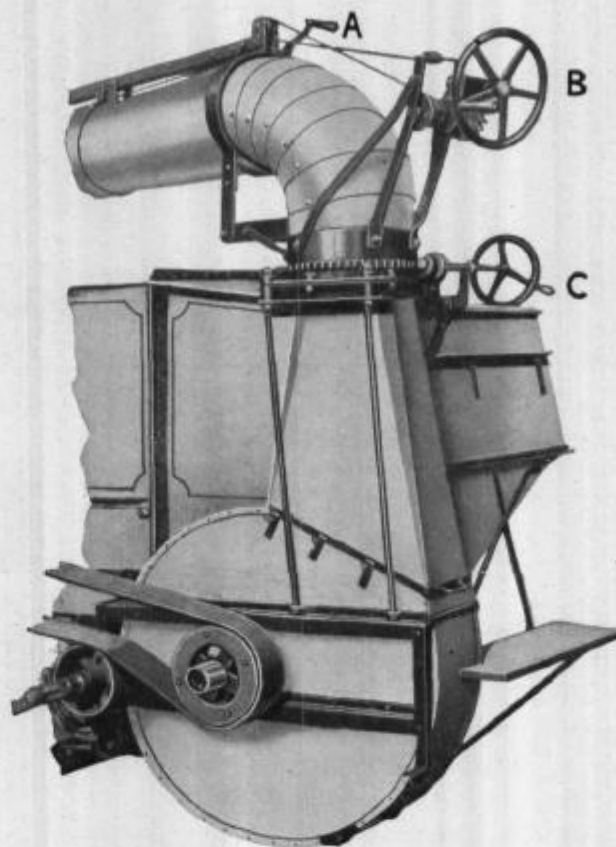
A wind stacker for delivering straw from the machine is regular equipment. It consists essentially of a housed blower fan and pipe. The stacker pipe can be adjusted up and down and swung in a semi-circle to direct the discharge of straw to any spot desired. This makes it possible to build straw stacks of large size without hand labor.

The stacker housing has a strong frame of angle steel and heavy sheet steel sides similar to those of the separator. The stacker frame is bolted directly to the rear angles of the separator, making a tight and substantial joint. From this rigid base the stacker pipe directs the discharge of straw and chaff.

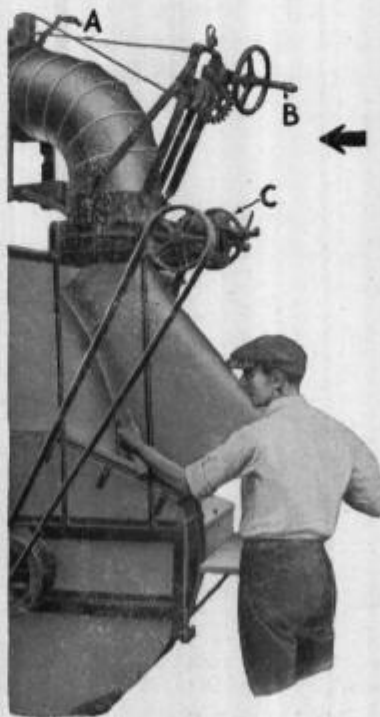
The stacker pipe is made of telescoping sections and can be extended quickly by means of a crank. A hand wheel is provided for up-and-down adjustments while another hand wheel permits moving the stacker pipe in a semi-circle. An adjustable hood at the outer end of the pipe deflects the straw downward. It is controlled by means of ropes and may be adjusted up or down or turned to either side.



Illust. 2 — Wind stacker fan pulley and belt tightener. (A), indicates Rockwood fiber pulley which drives fan. (B), belt tightener pulley. (C), lever for adjusting belt tightener. (D), lock bolt for holding belt tightener in position.



Illust. 3 — Blower fan housing and section of wind stacker pipe. (A) is crank for extending stacker pipe. (B), handwheel for raising and lowering pipe. (C), handwheel for moving stacker pipe to either side.

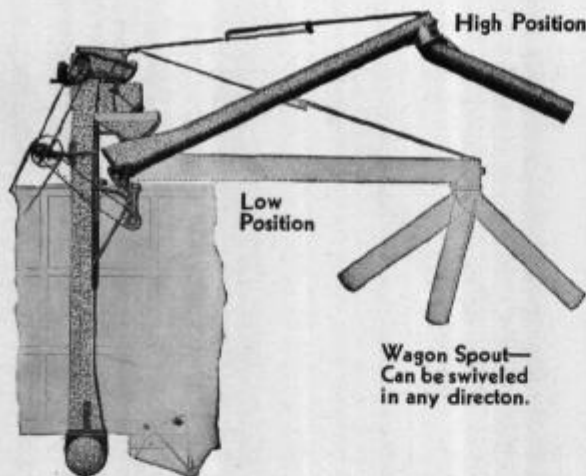


The oscillating device indicated at (C) is supplied extra. Its function is to move the blower pipe automatically from side to side, thus making it possible to build semi-circular stacks without close attention by the operator. (A) is crank for extending blower pipe. (B) handwheel for raising and lowering pipe.

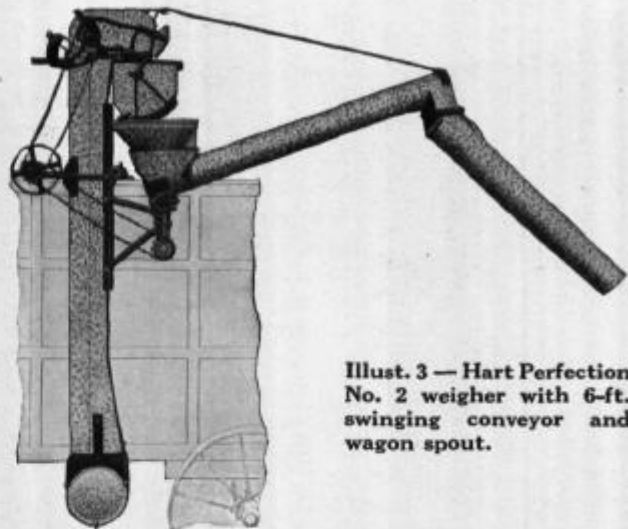
Illust. 4 — Removing the section above the blower housing gives easy access to the blower fan and to the elbow in the blower pipe.

Stationary Grain Threshers

(Grain Handling Equipment)



Illust. 1—Hart Perfection No. 1 weigher with 9-ft. tilting-swinging conveyor and wagon spout.

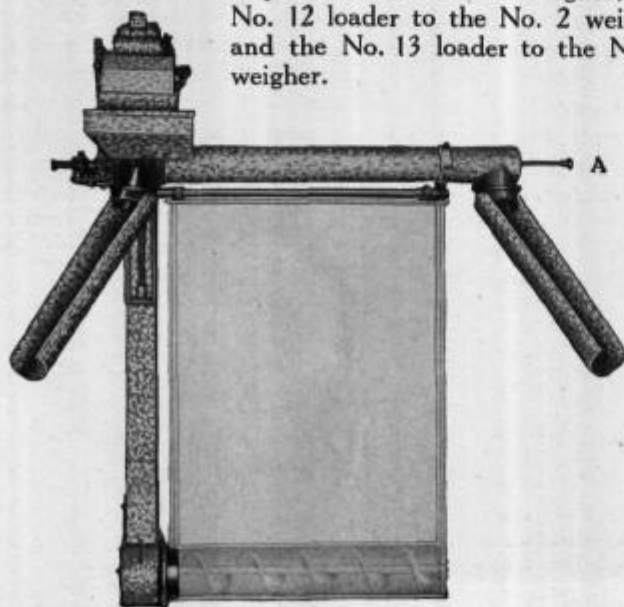


Illust. 3—Hart Perfection No. 2 weigher with 6-ft. swinging conveyor and wagon spout.

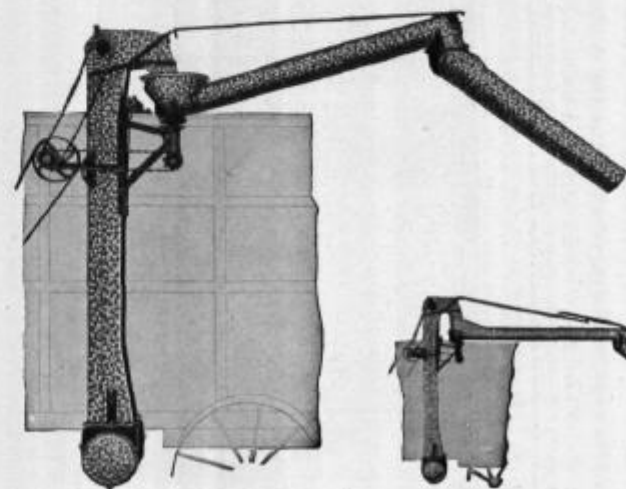
Various types of grain-handling equipment are available for both sizes of threshers. **Weighers** are devices which elevate the grain from the grain auger, weigh it, and automatically record the number of bushels threshed. The grain is delivered from a spout into wagons, bins, or sacks. **Loaders** have the same function but do not weigh the grain. **Short Elevator Bagger** is adapted to bagging only. **Delivery Spout** takes the grain direct from the grain auger and delivers it into a box or hand measure.

Hart Perfection Loaders

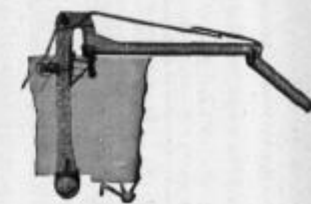
These loaders are similar to the weighers described at right, but do not have the weighing mechanism. The No. 11 loader corresponds to the No. 1 weigher; the No. 12 loader to the No. 2 weigher and the No. 13 loader to the No. 3 weigher.



Illust. 2—Hart Perfection No. 3 loader with stationary cross conveyor and two wagon spouts. (A), indicates lever for changing delivery to either side.



Illust. 4—Hart Perfection No. 12 loader with swinging conveyor and wagon spout.



Illust. 5—Hart Perfection No. 11 loader with tilting, swinging conveyor and wagon spout.

Hart Perfection Weighers

No. 1 Weigher: A low-head, high-delivery type suitable for either field or bin threshing. Equipped with standard Hart weighing mechanism and 9-ft. tilting-swinging conveyor and swiveled wagon spout. The tilting feature permits higher delivery than is possible with other types. The swinging feature permits the conveyor to be swung across the machine so as to make delivery from either side. The wagon spout can be raised, lowered, or turned completely around. Bagging spouts, extra.

No. 2 Weigher: This weigher is similar in general construction to the No. 1 but does not have the tilting feature on the conveyor. The conveyor is of the swinging type (6 feet long) and is equipped with swiveled wagon spout. Bagging spouts extra.

No. 3 Weigher: Recommended for barn threshing and wherever an exceptionally low-head wagon elevator is required. Equipped with standard Hart weighing mechanism, stationary cross conveyor, and two swiveled wagon spouts. Delivery can be switched to either side by merely shifting the auger lever.

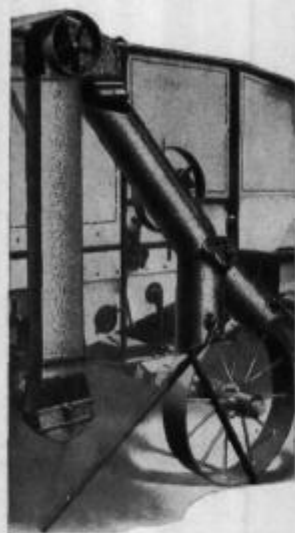


INTERNATIONAL HARVESTER



Stationary Grain Threshers

(Grain Handling Equipment)



Illust. 1— Short elevator bagger equipped with tally.

Short Elevator Bagger

A convenient type of elevator for bagging grains, beans, peas, etc. Designed and built expressly for IH threshers. Constructed of heavy sheet steel with wood partitions to assure quiet running. Bagging spout has a switch-over lever and can be supplied with or without tally.

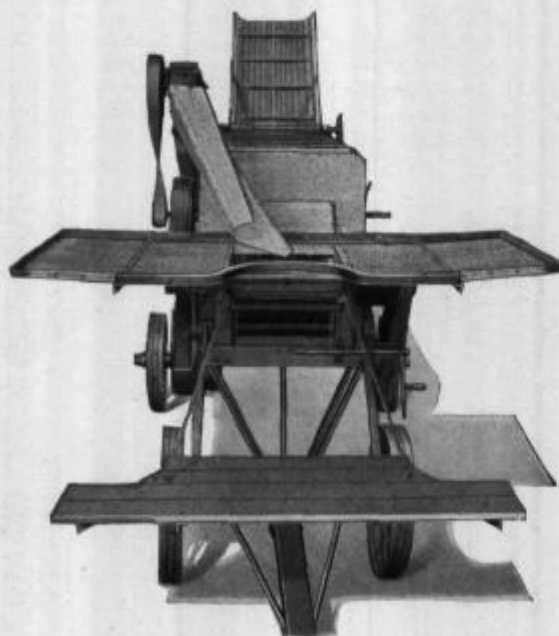
Grain Delivery Spout

This device (not illustrated) forms an extension to the grain auger housing so that delivery can be made directly into a box or hand measure. Includes auger extension and special belt

and pulley so that the spout can be attached and operated from either side of the machine.

Hand Feed Equipment

Equipment for hand feeding is preferred in some localities and can be supplied for either size thresher. The feeding tables, located on the right and left sides of the feeder opening, are constructed of heavy sheet steel,



Illust. 2— Front view of thresher equipped with hand-feed equipment and rake stacker. Note the steel feeding tables and the operator's platform below on which the feed operator stands.

Illust. 3— Standard type Hart bagging spout without tally.



Illust. 4— Spokane (rice) type Hart bagging spout without tally.



reinforced by steel angles which bind the entire edges of the tables. The tables fold compactly for transportation. The operator's platform is constructed of wood, thoroughly reinforced by steel angles and supported by two steel rods from the frame of the thresher. The operator's platform can be raised up against the feeding table, making a compact arrangement for transporting.

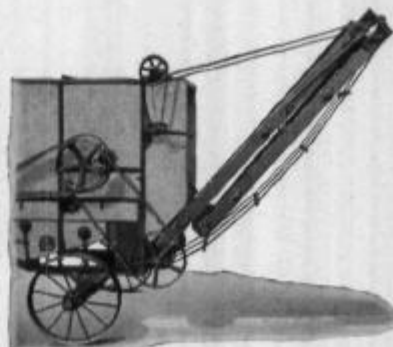
Hart Bagging Spouts

Two types of Hart bagging spouts are available—the standard type shown in Illust. 3, and the Spokane (rice) type shown in Illust. 4. The latter type is particularly adapted for the rice districts where large bags are used. Either type can be had with or without tally as ordered. These bagging spouts will fit any standard Hart wagon spout.

Rake Type Stacker

There are certain conditions and localities where the rake type of stacker is preferred. This stacker rakes or carries the straw away from the separator by means of a slatted conveyor. The conveyor is formed of rubberized belting of good quality to which wood cross slats are riveted. Folding canvas sides are provided to keep the wind from scattering the straw as it moves up the carrier. The carrier is easily adjusted for height by means of a windlass located at the rear of the separator. The carrier can be folded compactly and drawn up against the rear end of the thresher for transport.

Illust. 5— Rake stacker on thresher shown folded for transport.



Stationary Grain Threshers

(Special Equipment)



Illust. 1—A mechanical brake attachment for threshers equipped with pneumatic tires is available as special equipment. The attachment mounts on either spoke or disc-type rear wheels.



Illust. 2—The chaff blower is a valuable attachment for separating the chaff from the straw. Shield (A) deflects chaff downward to be picked up by fan in housing (B). Blower pipe (C) has two flexible joints.

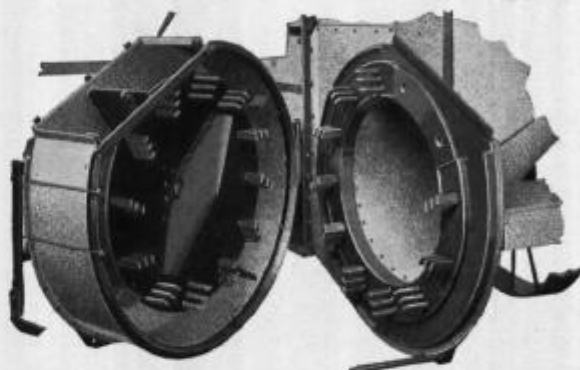


Illust. 3—A rear wheel brake attachment for steel wheels is available for hilly sections. It is controlled by means of a rope and brake lever from the rear.

Pneumatic-Tire Wheels

Wheels with pneumatic tires can be supplied as special equipment for all stationary threshers. These wheels interchange with the steel wheels regularly supplied, and will fit the same axles and roller bearings. Pneumatic tires permit fast travel over hard-surfaced roads without injury to the thresher or the road surface.

The tires are 6-ply implement type, 7.00 x 16-in. size. They are mounted on drop-center rims and can be removed as simply as an automobile tire. Hubs take the regular screw caps which are supplied with steel wheels.



Illust. 4—Straw bruiser supplied as special equipment. The straw bruiser housing is hinged and may be swung back to give easy access to the bruiser head.

Straw Bruiser

When so ordered the windstacker type of thresher can be supplied with a straw bruiser. It is used to bruise or break straw to make it more palatable for feeding. Bruiser consists of a revolving head with teeth on one side and fan on the other. The bruiser head teeth work in conjunction with a series of stationary teeth held in a removable ring section, bruising the straw between them as the head revolves.

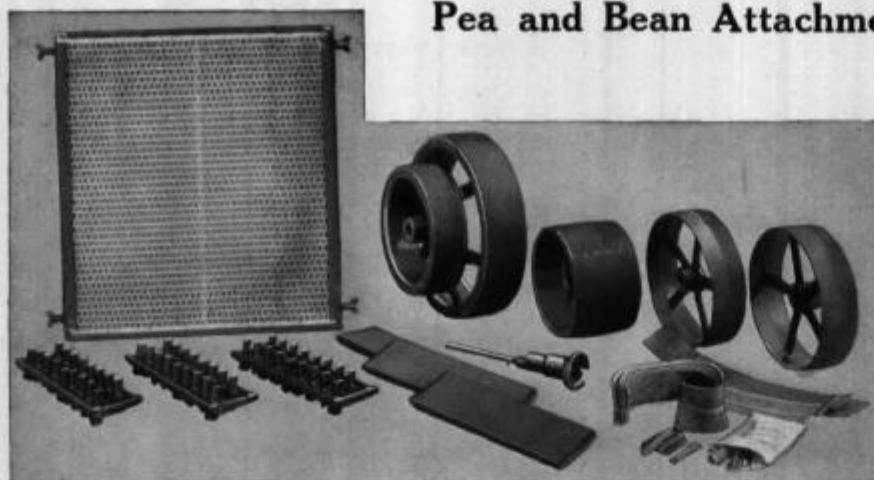
Regular equipment consists of 66 teeth but for extra fine cutting, 93 tooth equipment can be supplied. Plain-type fan and plain ring sections are also included and may be substituted when it is desired to leave straw unbruised.



Illust. 5—Rear-end hitch supplied at extra cost. Permits pulling thresher from rear—useful especially for barn threshing.

Stationary Grain Threshers

Pea and Bean Attachments



Illust. 1—Pea and bean attachment with pulley combination to give a cylinder speed of 400 r.p.m. A pulley combination for 600 r.p.m. is also available. Where a lower cylinder speed is required the speed-reducing countershaft attachment is used.

Low Cylinder Speeds

Attachments are available for efficient threshing of peas, beans, and other similar crops where low cylinder speeds are required to avoid excessive cracking of the seed. These attachments comprise changeover parts to secure proper speed of the cylinder and other parts of the machine, also changes in concaves and screen equipment. They are available in several different speed combinations as listed below.

400 r.p.m. Combination: Cylinder drive pulley, 14 x 8½-in. Feeder pulley, 16½ x 4½-in. Shoe crank pulley, 16½ x 4½-in. Combination Rockwood pulley for cleaning fan and wind stacker, 24 x 5½-in. and 16½ x 4½-in. Concave with special thin teeth. Blank concaves (wood). Shoe screen, slotted hole, 3/16 x 3/4-in. (regular) or 9/64 x 3/4-in. (special). Belt extensions. Key puller.

Note: This equipment requires that the tractor be equipped with special pulley of proper diameter to give a cylinder speed of 400 r.p.m. in combination with the 14-inch pulley used on the cylinder.

600 r.p.m. Combination: Cylinder drive pulley, 14 x 8½-in. Feeder pulley, 10 3/8 x 4½-in. Shoe crank pulley, 10 3/8 x 4½-in. Combination Rockwood pulley for cleaning fan and wind stacker, 16½ x 5½-in. and 10 1/4 x 4½-in. Concaves with special thin teeth. Blank concaves (wood). Shoe screen slotted

hole, 3/16 x 3/4-in. (regular) or 9/64 x 3/4-in. (special). Belt extension. Key puller.

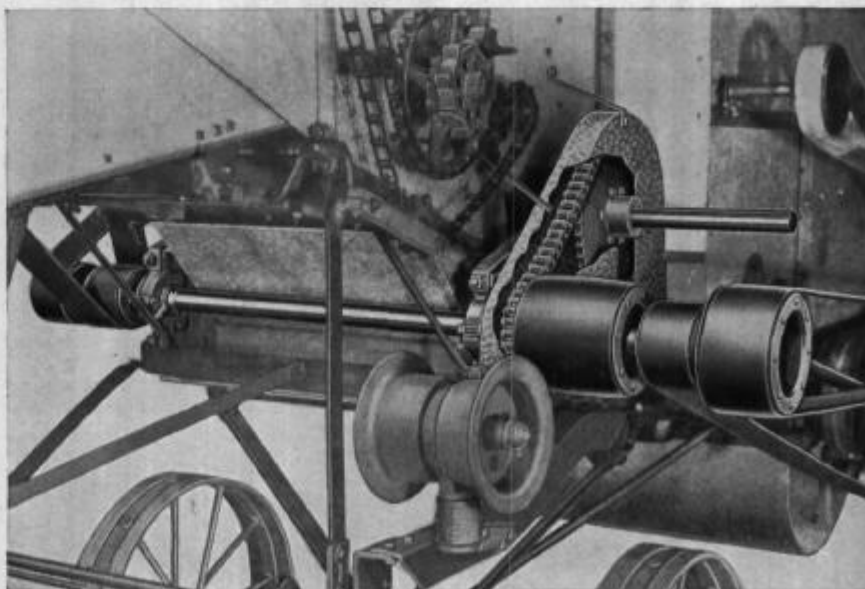
Note: No change in tractor pulleys as regularly supplied is required.

Countershaft Attachment

Some of the larger varieties of beans may require a cylinder speed as low as 275 r.p.m. to avoid excessive cracking. For such crops the speed-reducing countershaft attachment is required. It is also recommended wherever it is necessary to change frequently the cylinder speeds for threshing different crops.

This device consists essentially of a countershaft placed forward of the cylinder shaft and connected to it by means of a roller chain drive. (See Illust. 2.) By using any one of three drive sprockets on the cylinder shaft the following speeds are obtained: 33-tooth sprocket (regular), 400 r.p.m.; 22-tooth sprocket (special), 600 r.p.m.; 48-tooth sprocket (special), 275 r.p.m.

The pulleys normally used on the cylinder shaft are removed and replaced in similar order on the countershaft. No change in pulleys is required.



Illust. 2—Speed-reducing countershaft attachment. By changing the sprocket on the cylinder shaft, three different speed combinations can be obtained—400, 600, and 275 r.p.m. The regular cylinder shaft pulleys are used.



Stationary Grain Threshers

(Special Crop Attachments)

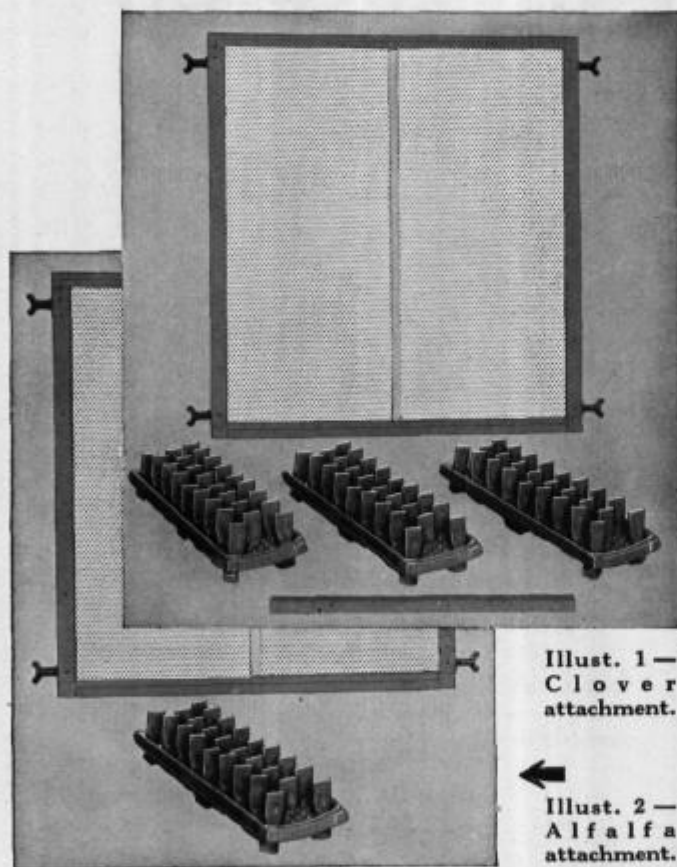
For Alfalfa and Clover

The following equipment can be supplied for occasional or limited threshing of alfalfa and clover with the regular grain thresher:

Alfalfa Attachment: One special 3-row concave with corrugated teeth. One special shoe sieve— $\frac{1}{10}$ or $\frac{1}{20}$ -in. roundhole as selected.

Clover Attachment: Three 3-row concaves with corrugated teeth. Wood spacer. Special shoe sieve, $\frac{1}{12}$ -in. round hole.

Machines built expressly for threshing clover and alfalfa on a commercial scale are described on following pages.



Illust. 1 —
C l o v e r
a t t a c h m e n t.

Illust. 2 —
A l f a l f a
a t t a c h m e n t.

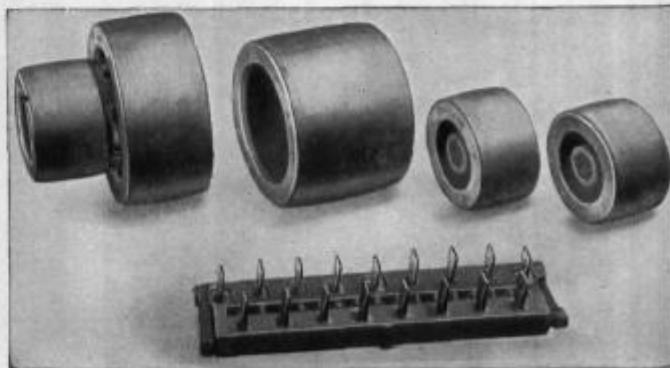
Kafir Corn Attachment

For threshing any of the varieties of sorghum grains. Attachment comprises the following: Cylinder drive pulley (Rockwood), 12-in. diameter, $8\frac{1}{2}$ -in. face, giving a cylinder speed of 800 r.p.m. Shoe crank pulley (Rockwood), 8-in. diameter, $4\frac{1}{2}$ -in. face. Feeder pulley (Rockwood), $8\frac{1}{2}$ -in. diameter, $4\frac{1}{2}$ -in. face. Combination pulley for cleaning fan and wind stacker (Rockwood), $12\frac{3}{4}$ x 5-in. and 8 x $4\frac{1}{2}$ -in. One concave with special thin teeth.

Special Screens and Sieves

A wide variety of special screens and sieves (as listed below) are available to meet various threshing conditions.

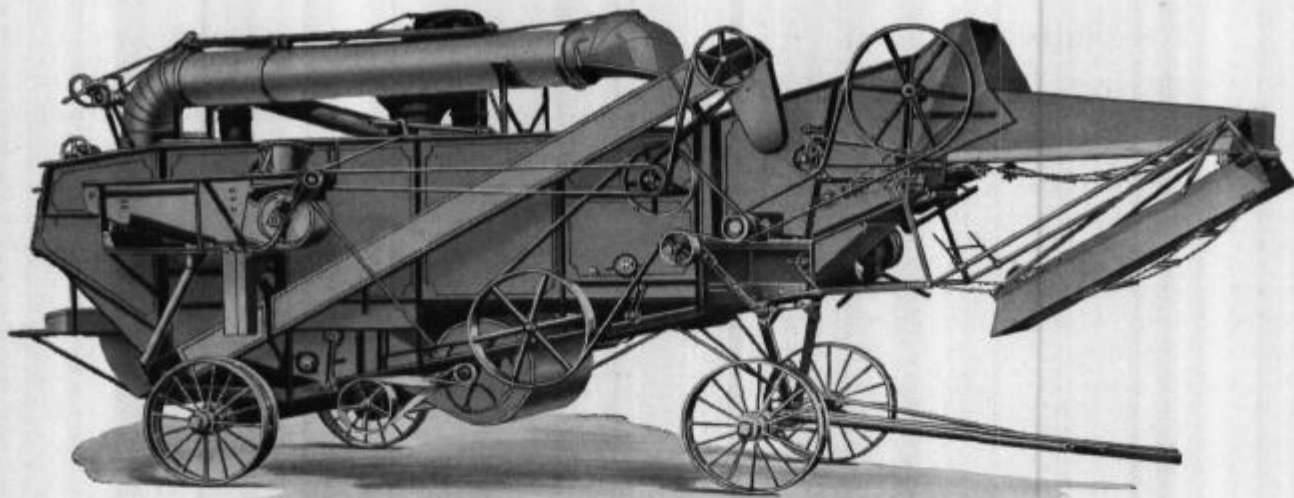
- 1/4-in. round hole shoe sieve. Special for grains.
- 5/32-in. round hole shoe sieve. For flax and lespedeza.
- 1/8-in. round hole shoe sieve, also recleaner sieve. For lespedeza.
- 7/64-in. round hole recleaner sieve. For alfalfa, clover, lespedeza.
- 1/10-in. round hole shoe sieve. For alfalfa. Also weed screen.
- 3/32-in. round hole shoe sieve (special weed screen).
- 5/64-in. and 7/54-in. round hole recleaner sieve. For red clover and alsike.
- 1/12-in. round hole shoe sieve. For clover.
- 5/64-in. round hole recleaner sieve. For alfalfa, sweet clover, lespedeza.
- 1/14-in. round hole recleaner sieve. For red clover.
- 1/16-in. round hole shoe sieve for timothy. Also clover recleaner sieve.
- 1/18-in. round hole cleaner sieve. For alsike.
- 1/20-in. round hole shoe sieve for alfalfa. Also special cleaner sieve for red clover and alsike.
- 3/64-in. round hole recleaner sieve. For alsike.
- 11/64-in. triangular weed screen, special.
- 9/64-in. triangular weed screen, regular.
- 3/16 x 3/4-in. oblong hole shoe sieve. Regular for peas, beans, soybeans.
- 9/64 x 3/4-in. oblong hole shoe sieve. Special for peas, beans, soybeans.
- 3/32 x 1/2-in. oblong hole shoe sieve. For orchard grass.
- 1/12 x 1/2-in. oblong hole shoe sieve. Regular for rice.
- 1/14 x 1/2-in. oblong hole shoe sieve. Special for rice.
- 1/16 x 1/2-in. oblong hole shoe sieve. Special weed screen.
- 1/12 x 1/4-in. oblong hole shoe sieve. Special weed screen.
- 8 x 8 wire mesh shoe sieve. Regular for red top.
- 14 x 14 wire mesh recleaner sieve. For red clover and alsike.
- 16 x 16 wire mesh shoe sieve. Special for red top.
- 18 x 18 wire mesh recleaner sieve. For red top.
- 22 x 22 wire mesh shoe sieve. Special for red top.
- 24 x 24 wire mesh recleaner weed screen. Alfalfa, sweet clover, lespedeza.
- 30 x 30 wire mesh recleaner weed screen. Red clover and alsike.
- 59 x 50 wire mesh shoe sieve. Special for red top.



Illust. 3 — Kafir corn attachment for threshing any of the various varieties of sorghum grains requiring a cylinder speed of 800 r.p.m. to 850 r.p.m.



Alfalfa Threshers



Illust. 1 — Alfalfa thresher equipped with recleaner attachment. Thresher is available in two sizes, 22 x 38-in. and 28 x 46-in.

Designed Especially for Alfalfa

The alfalfa thresher is built especially for threshing alfalfa and similar seed crops. The concaves are equipped with special corrugated teeth which help to rub the seed cleanly from the pods. The straw rack has perforated metal sections and is operated at a speed of 145 r.p.m. to assure clean separation. The beater grate is covered to prevent straw from lodging and returning over the cylinder.

Cleaning is accomplished in the shoe in the usual manner. Although not supplied as a regular feature with the alfalfa thresher, unless so specified and at additional cost, the recleaner attachment is recommended for all alfalfa threshers as it enables the operator to do much cleaner work. When the recleaner is used, delivery is made from the grain elevator through the swinging conveyor spout into the hopper of the recleaner. As seed passes through the hopper it is spread out by dividers and delivered evenly to the recleaner sieves.

Specifications

Length of perforated straw rack, 11 ft. 6 in. Other specifications same as for stationary grain threshers.

Regular Equipment

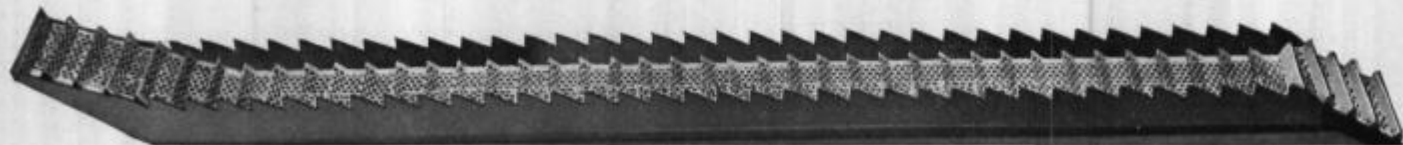
Concave with corrugated teeth. Guard over beater grate. 1/10-inch round-hole shoe screen. Perforated type straw rack. Other equipment is same as listed under grain threshers.

Special Equipment

Alfalfa recleaner. Other special equipment is same as listed under grain threshers.



Illust. 2 — Corrugated tooth concaves are supplied regularly with alfalfa threshers.



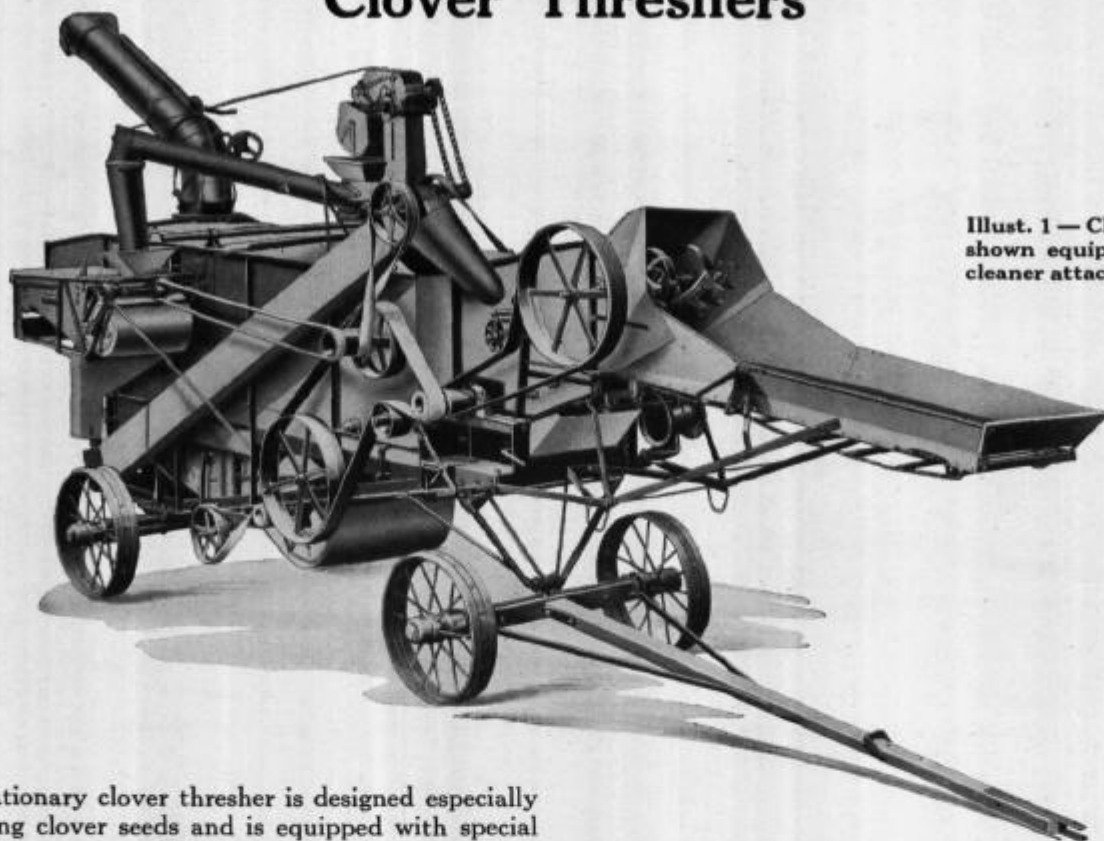
Illust. 3 — Single section of specially designed straw rack showing perforations for separating alfalfa seed from straw.

Specifications

Size	Description	Net Weight (Approx.)
22 x 38 in.	Alfalfa thresher, complete with self-feeder with 9-ft. carrier, wind stacker, and No. 2 Hart Perfection weigher.....	5390 lb.
28 x 46-in.	Alfalfa thresher, complete with self-feeder with 9-ft. carrier, wind stacker, and No. 1 Hart Perfection weigher.....	5780 lb.
	Alfalfa recleaner.....	282 lb.



Clover Threshers



Illust. 1 — Clover thresher shown equipped with recleaner attachment.

The stationary clover thresher is designed especially for threshing clover seeds and is equipped with special parts for this purpose. The basic all-steel construction, ball-bearing cylinder, reciprocating type of straw rack (perforated), adjustable chaffer and shoe sieve are much the same as on standard grain threshers and alfalfa threshers. It should be noted, however, that this machine is built expressly for clover seeds and that the quality of its work is unexcelled by that of any other clover huller or thresher on the market.

Correct Speeds: The cylinder and other parts have correct speeds to secure proper threshing and clean separation without waste.

Corrugated Concave Teeth: The concave is equipped with special corrugated teeth similar to those shown in Illust. 2 on the preceding page. These teeth give the most satisfactory results in removing seed from the pods.

Perforated Straw Rack: The four-section straw rack is of special design with perforations for separating the clover seed from the straw. The rack sections are extra long and are similar to the ones shown in Illust. 3 on the preceding page.

Extra Wide Tailboard: The tailboard is extra wide, permitting high adjustments to prevent the seed from blowing over.

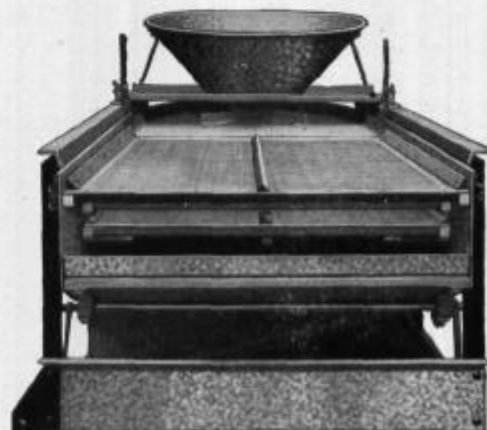
Clover Sieve: A $\frac{1}{2}$ -inch round-hole clover sieve is used in the shoe bottom in connection with the standard adjustable chaffer and adjustable upper shoe sieve.

Recleaner Attachment: A recleaner attachment with suitable sieves for cleaning clover can be supplied. A wide assortment of recleaner sieves and screens for various varieties of clovers, Lespedeza, etc. is available.

Regular Equipment: Concaves with three rows of corrugated teeth. Four-section perforated straw rack. $\frac{1}{2}$ -inch round-hole shoe sieve. Extra wide tailboard. Other equipment the same as listed under grain threshers.

Special Equipment: Clover recleaner. Other equipment same as listed under grain threshers.

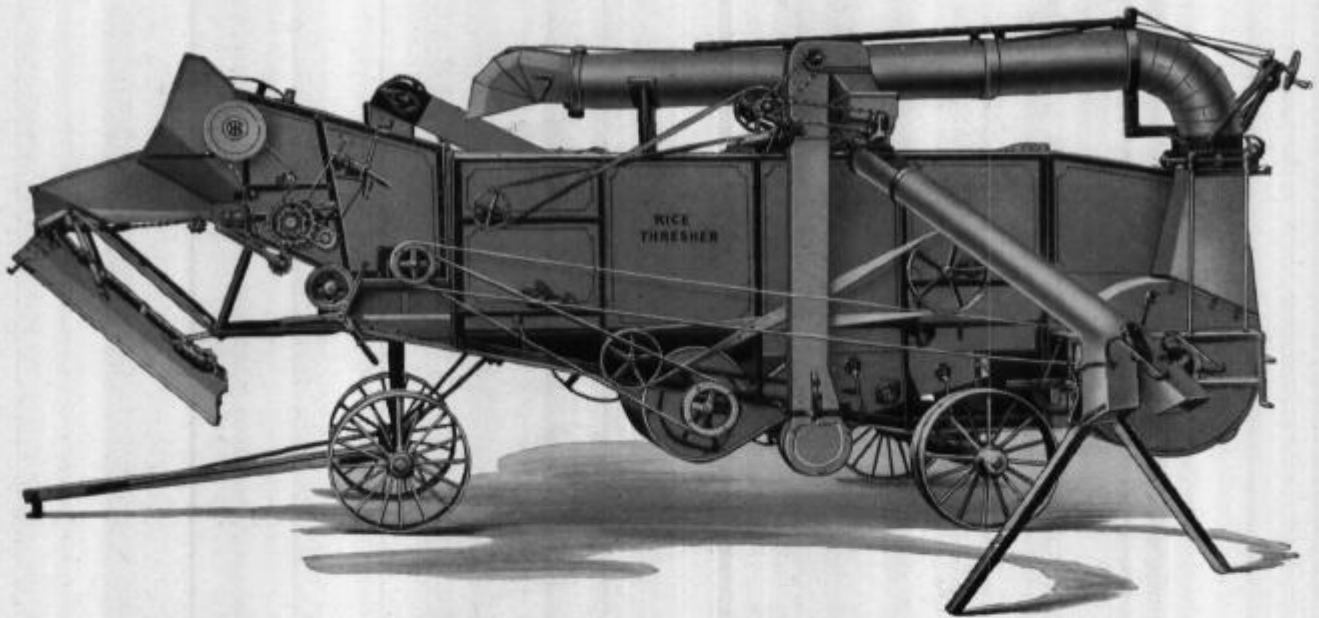
Weights: Weight of 22 x 38-in. thresher, complete with 9-ft. carrier, wind stacker, and No. 2 Hart Perfection weigher—5,426 lb. Weight of 28 x 46-in. thresher, complete with 9-foot carrier, wind stacker, and No. 1 Hart Perfection weigher—5,832 lb. Weight of clover recleaner, 278 lb.



Illust. 2 — Recleaner attachment showing construction and sieve arrangement. It is supplied as special equipment for clover, alfalfa and standard grain threshers. A wide assortment of recleaner sieves are available for various seed crops.



Rice Threshers



Illust. 1 — Rice thresher equipped with Hart Perfection No. 3 weigher and rice-type bagging spout with tally.

Stationary rice threshers, available in two sizes, are built expressly for threshing rice. The cylinder and concaves have special rice teeth that do a clean job of threshing without cracking the kernels. A 12-in. drive pulley is supplied regularly for the cylinder shaft and the machine is otherwise equipped with suitable pulleys to maintain proper speeds for threshing rice. The sturdy-all-steel construction prevents warping, twisting and misalignment of parts. The wheels have extra wide tires (8-in.) that provide a good foundation when threshing and when moving over wet, soft ground.

Regular Equipment

Wheel with 8-in. tires. Chaffer with tail rake, $\frac{1}{4} \times \frac{1}{2}$ -in. oblong-hole shoe screen. Other equipment is same as listed under grain threshers.

Special Equipment

Same as listed under grain threshers.

Specifications

Description	22 x 38	28 x 46
Speed of cylinder, r.p.m.	825	825
Diameter of main drive pulley, regular	12-in.	12-in.
Width of tires, front wheels	8-in.	8-in.
Width of tires, rear wheels	8-in.	8-in.
Capacity, bags* in 10 hours:		
In difficult threshing	150-200	250-300
In light, easy threshing	300-350	400-450

Note: Other specifications are same as shown under grain threshers.
*Bag contains about 4 bushels of unhulled rice.

Weights

Size	Description	Net Weight (Approx.)
22 x 38-in.	Rice thresher, complete with self-feeder with 9-ft. carrier, wind stacker, and No. 2 Hart Perfection weigher	5450 lb.
28 x 46-in.	Rice thresher, complete with self-feeder, 9-ft. carrier, and No. 1 Hart Perfection weigher	5925 lb.



Illust. 2 — This shows the rice thresher equipped with No. 13 Hart Perfection loader (with stationary cross conveyor) and rice-type bagging spout with tally.

CORN HARVESTING MACHINES

Section 10

Corn Binders:

Page

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Ensilage Cutters:

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Ensilage Harvester:

No. 2 Ensilage harvester	372-375
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Corn Pickers:

Farmall Mounted

No. 24 (two-row) for Farmalls H and M	379-384
No. 2M (two-row) for Farmall M, F-20 and F-30	385-386

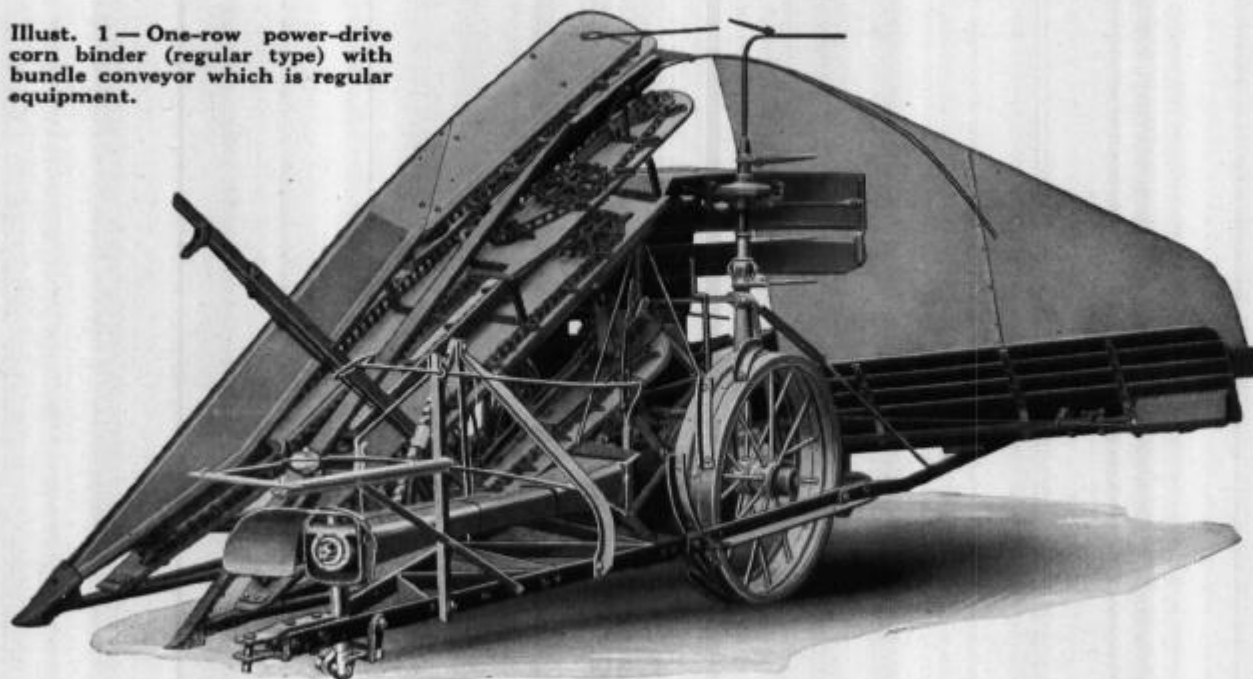
Pull Type

No. 14-P (one-row)	387-388
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One-Row Power-Drive Corn Binder

Illust. 1 — One-row power-drive corn binder (regular type) with bundle conveyor which is regular equipment.



Simple, More Direct Power Line

- No abrupt turns to consume power.
- Fewer knuckles and bearings.
- Drive gears enclosed and oil-bath lubricated.

Fully Controlled From Tractor Seat

- Butt pan adjustable from seat.
- Carrier trip lever accessible without turning around.
- Raising lever adjustable for length.

Two Butt Gatherer Chains

- Two chains (instead of one) support stalks more firmly, assure positive elevation.
- No clogging — better bundles.

Heavy-Duty Binder Head

- Handles large volumes at fast travel speeds.

The one-row power-drive corn binder is a sturdily built machine designed for the faster operating speeds of modern tractors. An ideal size for the average row-crop farm, this binder is capable of harvesting corn, sorghums, and similar crops at the rate of 10 to 15 acres a day. Its size and power requirements are such that it can be used with any 1 or 2-plow tractor equipped with power take-off and suitable hitch connections.

Two Types

The binder is available in two types, each designed for maximum efficiency in specific crop conditions. The *regular* type is suitable for tall and average height crops as commonly grown in the Corn Belt. The *short* type is designed for short-growing row-crops which may be only a few feet in height. The general construction of

both types is very similar except that the short binder has a lower binder head with two packer arms instead of three as on the regular binder; also, the gatherers are lower in height and the gathering chains extend closer to the ground.

With the regular binder the twine band can be placed a distance of 21 to 31 inches from the butt of the bundle; on the short binder this adjustment ranges from 12 to 22 inches.

Regular Equipment

Regular or short type binder, as ordered. Conveyor type bundle carrier with shield. Steel wheels.

Special Equipment

Tractor hitch and power-drive connections for various tractors as specified. Bundle wagon loader. Bundle loader operator's platform. Offset wagon hitch (specify tractor). Pneumatic-tired wheels (7.50 x 16-in., 6-ply). Road rings for steel wheels. Stalk lifters for Farmall tractors. Soybean attachment for regular type binder.

Tractor Hitches and Power-Drive Connections

(For tractors equipped with standardized power take-off)

ZDA-1465 for tractors with $1\frac{3}{8}$ -in. splined take-off shaft.

ZDA-1571 tractors with $1\frac{1}{8}$ -in. splined take-off shaft.

ZDA-1572 for tractors with $1\frac{3}{4}$ -in. splined take-off shaft.

Note: Special conversion packages can be obtained for converting tractors equipped with non-standardized power take-off to A.S.A.E. standards. Power-drive hitches as listed above, can then be used with such converted tractors.

Weights

Description	Net Weight (Approx.)
Regular type binder with conveyor	*1905 lb.
Short type binder with conveyor	*1820 lb.
Wagon bundle loader	495 lb.
Soybean attachment	385 lb.

*Less tractor hitch and power drive connections.



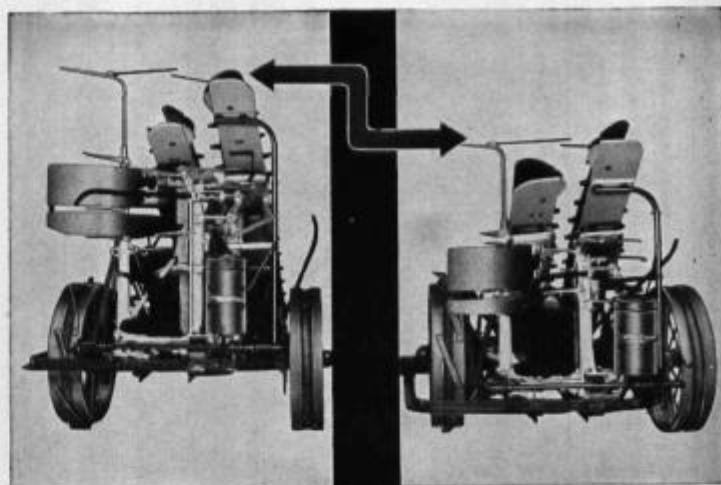
One-Row Power-Drive Corn Binder

Power Transmission

Power from the tractor is transmitted through a drive shaft and transmission gears, assuring uniform binder operation regardless of slippery ground or heavy crop conditions. The power line is offset at a minimum angle, with no abrupt turns to consume power. This more direct line of drive requires fewer knuckles and bearings and delivers a greater proportion of usable power. The drive gears are enclosed and run in a bath of oil. All bearings are equipped with pressure-gun fittings. A standardized telescoping shield over the drive shaft protects the operator.

Full Tractor Seat Control

The tractor operator has full control of the binder and can make all necessary operating adjustments without getting off the tractor seat. The lever for raising and lowering the gatherer points is adjustable in length to suit his convenience. The bundle trip lever is accessible without having to turn around. The height of the butt pan is adjusted by means of a conveniently-reached control rod. The twine can holds 2 balls. All these tend to make for uninterrupted operation, better work, and greater output per day.



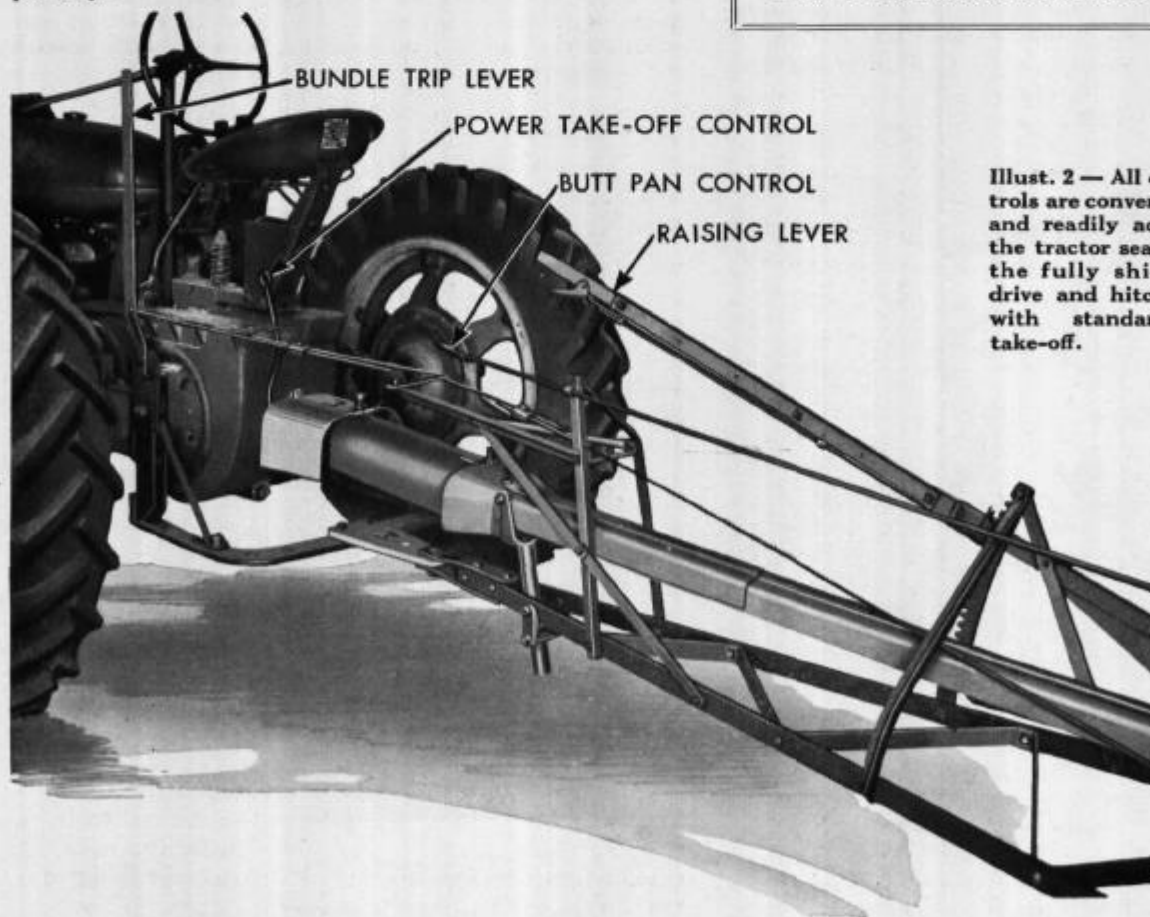
Regular

Short

Illust. 1 — Comparative views of the regular type and short type one-row power-drive binders.

Tractor Power Makes Possible—

- Smoother binder operation—no wheel slippage.
- Bigger capacity per day.
- Permits use of bundle loader and trailing wagon hitch.



Illust. 2 — All operating controls are conveniently located and readily accessible from the tractor seat. This shows the fully shielded power-drive and hitch for tractors with standardized power take-off.



One-Row Power-Drive Corn Binder

(Continued)

Efficient Gathering Mechanism

The gathering mechanism is designed to handle the stalks rapidly and efficiently at tractor travel speeds. The gatherer points are set wide apart, making it easy to follow the rows without missing any stalks.

Any down, or leaning stalks are picked up and straightened so that firm square-butt bundles will result. Six gatherer chains support the stalks firmly and move them rapidly to the binder head.

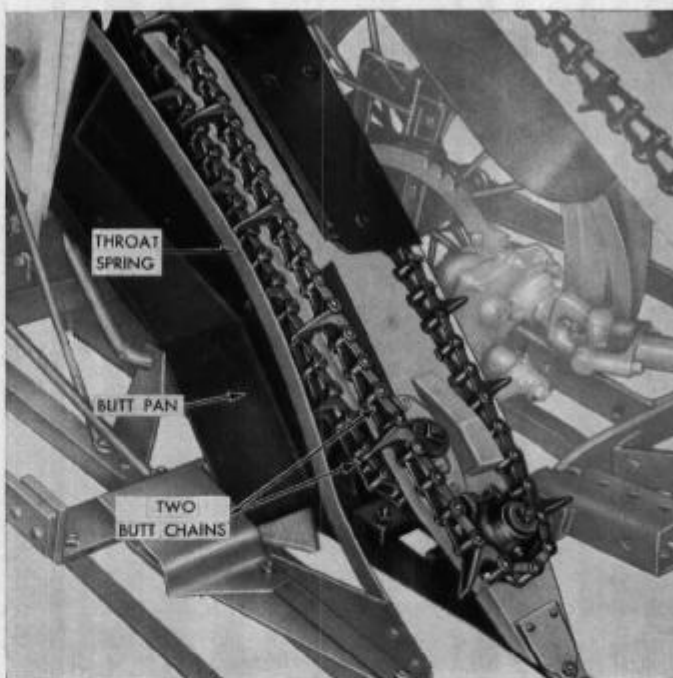
The spacing between the right and left-hand gatherers is just right so that the passageway for the stalks is neither too wide for efficient elevating nor too close so as to cause clogging in heavy crops.

Heavy-Duty Gatherer Chains

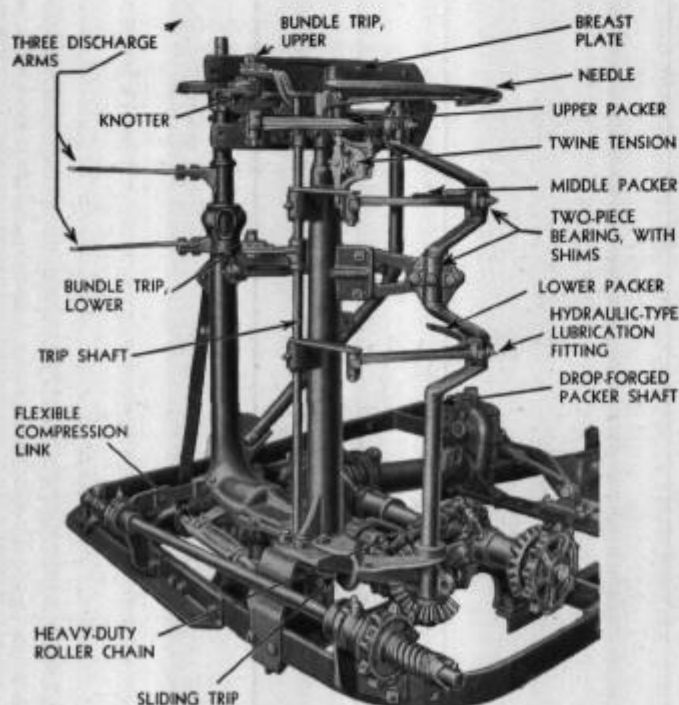
The gatherer chains are heavy malleable, pintle type. Every fifth link is equipped with a finger. These fingers assure positive elevating of the stalks, yet clear themselves of trash. There are six gatherer chains—four upper and two butt chains—properly located to support the stalks throughout their travel. A long, flat throat spring forces the stalks against the butt chains and helps to hold the butts firmly while the stalks are being cut.

Cutting Mechanism

The cutting mechanism consists of a reciprocating knife section working in conjunction with two stationary knives. This assures efficient cutting of all stalks and undergrowth. The sickle is operated by a steel pitman connected to a crank on the main drive shaft.



Illust. 2—Two butt chains at the lower part of the feed throat provide positive movement and support for the stalks. Short weeds and trash are kept moving up the butt pan without clogging. The throat spring holds the stalks against the chains.



Illust. 1—Binder head as used on the regular type corn binder. The short type binder has but two packers.

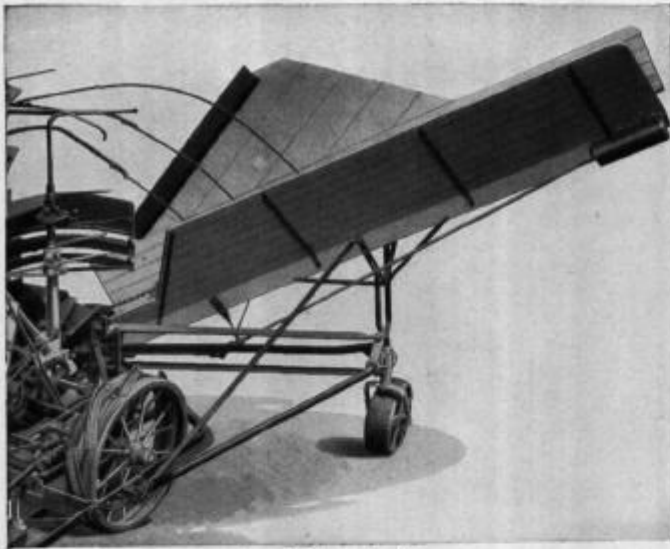
Heavy-Duty, Vertical Binder Head

The binder head is a heavy-duty vertical type designed especially for handling large volumes at fast travel speeds. Inasmuch as the one-row binder must frequently handle 10, 15 or even more tons of heavy green corn per hour, it is evident that the binding mechanism must be rugged in construction as well as accurate in performance. The regular type binder has three packers, mounted on a drop-forged shaft, which assemble the stalks into bundles against two trip arms. The trip arms can be set for any size bundle desired. A flexible compression link, connected to the trip arm shaft, absorbs shocks that might cause premature tripping. As soon as the bundle is formed the sliding trip is released, allowing the twine needle to place the twine band around the bundle. The knotter then makes the tie and the bundle is ejected by the discharge arms. On the regular type binder, the twine band can be placed at any point from 21 to 31 inches from the butt of the bundle. This is done by shifting the lever which controls the position of the butt pan.

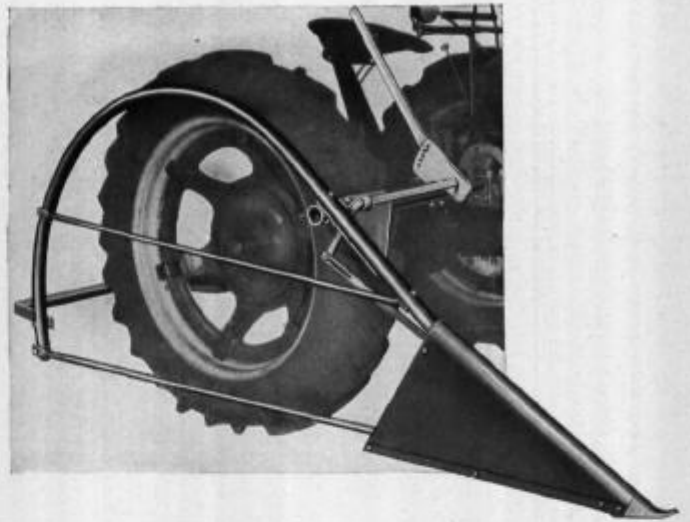
The knotter is standard IH design, noted for its simplicity and accurate tying. The twine knife is stationary and the knot is stripped from the hook by the discharge of the bundle. All parts over which the twine runs are hardened for wear.



Attachments for Power-Drive Corn Binders



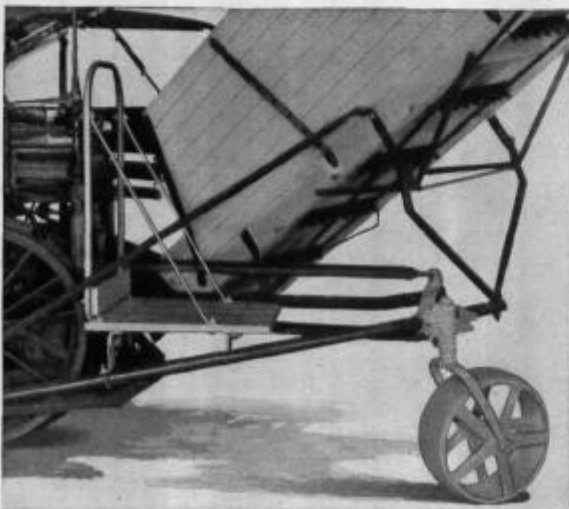
Illust. 1—A wagon bundle loader is available as special equipment to replace the regular conveyor-type carrier.



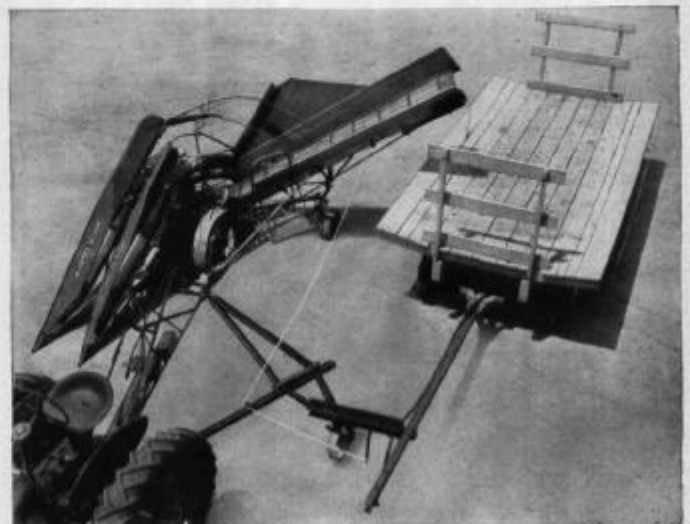
↑ Illust. 3—Special stalk lifters are available for the Farmall-H, Farmall-M, F-14, F-20 and F-30 tractors. They are useful when the corn binder is operating in down or leaning corn.



← Illust. 4—Pneumatic-tired wheels are available as special equipment. Tires are 7.50 x 16-in., 6-ply.



Illust. 2—A special operator's platform can be supplied for use with wagon loaders. The platform permits a man to ride alongside the elevator and assist in keeping the bundles moving promptly up the elevator when the crop is exceptionally tall or badly tangled.



Illust. 5—An offset chain-release wagon hitch is available for trailing a wagon alongside the binder. Order ZMA-488 for Farmalls H and M; ZMA-457 for all other tractors. Rope control allows the wagon to be dropped back for uniform loading.

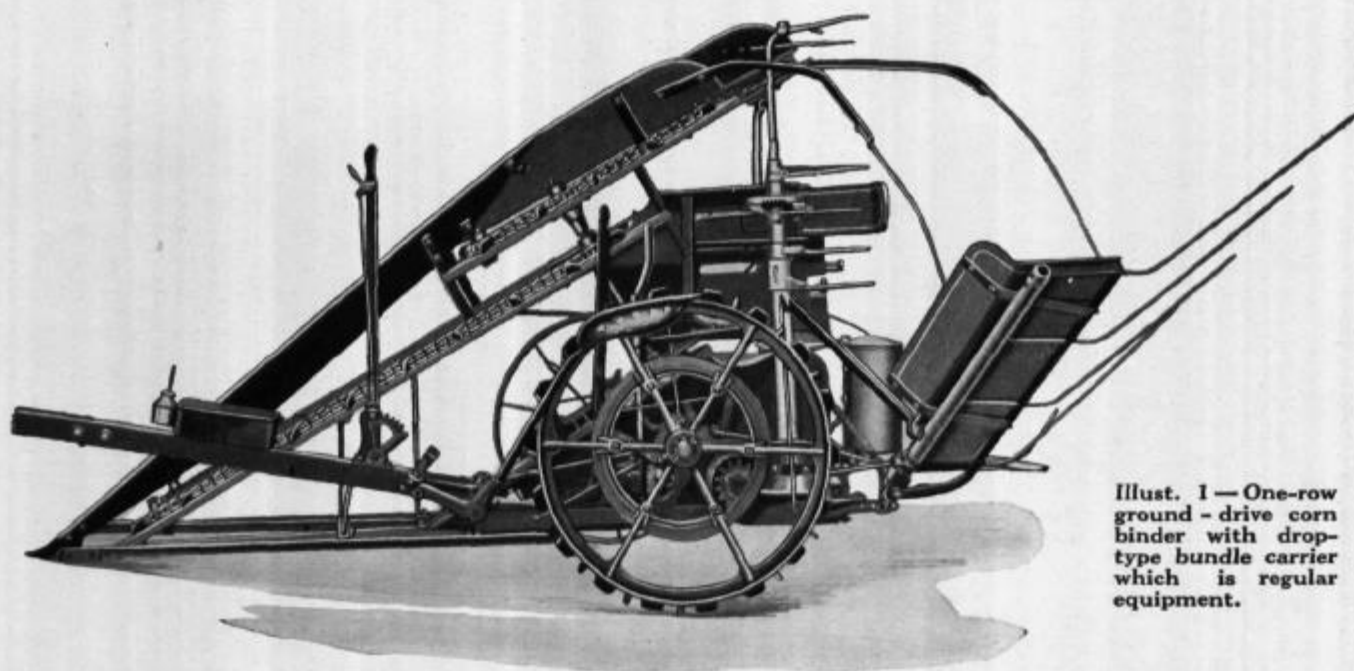


INTERNATIONAL HARVESTER





One-Row Ground-Drive Corn Binder



Illust. 1 — One-row ground-drive corn binder with drop-type bundle carrier which is regular equipment.

The one-row ground-drive corn binder is a light-draft dependable machine designed for use with horses or for trailing behind small tractors. Its sturdy construction, easy operation, and ability to deliver well-shaped, firmly-tied bundles make it popular wherever a ground-drive binder is preferred.

Regular and Short Types

Like all IH corn binders, the one-row ground-drive binder is available in two types—the *regular* or long type for average height and tall crops and the *short* type for use in short corn and forage crops. Twine band adjustments for the regular type binder are from 21 to 31 inches above the butts—for the short type binder, 12 to 22 inches.



Illust. 2 — Short-type binder designed especially for short-growing corn and forage row-crops.

Specifications

Description	Regular	Short
Length, overall	154 in.	154 in.
Extreme height	72 in.	68 in.
Width, overall	72 in.	72 in.
Main wheel (regular)	36 x 8 in.	36 x 8 in.
Cutting height	Up to 12 in.	Up to 12 in.
Gathering width	22 in.	22 in.

Internal Gear Drive

Power for operating the binder is transmitted through gears directly from the main drive wheel. A large internal gear is attached to the main wheel and engages a pinion on the countershaft which, in turn, operates the gatherers, the cutting knife, and binder head. This internal type of gear offers the advantage of always having a large number of teeth engaged, thus providing a drive that is positive-acting and long-lasting.

Roller Bearings—Pressure Lubrication

Smooth operation and light draft are assured by the use of roller bearings at all important friction points. The bearings are fitted for pressure-gun lubrication.

Regular Equipment

Seat. Drop-type bundle carrier. Pole, neckyoke, and 3-horse evener.

Special Equipment

Stub tongue and tractor hitch. Tongue truck with steel wheels. Tongue truck with pneumatic-tired wheels (4.00 x 9 in.). Conveyor bundle carrier. Bundle wagon loader. Operator's platform attachment (for use with bundle loader). Offset wagon hitch (specify tractor). Stalk lifters for Farmall tractors. Soybean attachment (for regular binder). Low-cut attachment (for regular binder). Wide main wheel (10 in. face).

Weights

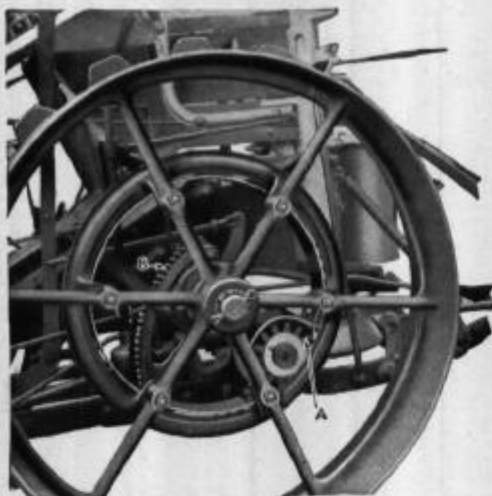
Description	Net Weight (Approx.)
Regular binder with drop-type carrier and 3-horse hitch	1620 lb.
Short binder with drop-type carrier and 3-horse hitch	1535 lb.
Conveyor bundle carrier	155 lb.
Bundle wagon loader	520 lb.
Two-wheel tongue truck (steel)	220 lb.
Tractor hitch	40 lb.



INTERNATIONAL HARVESTER



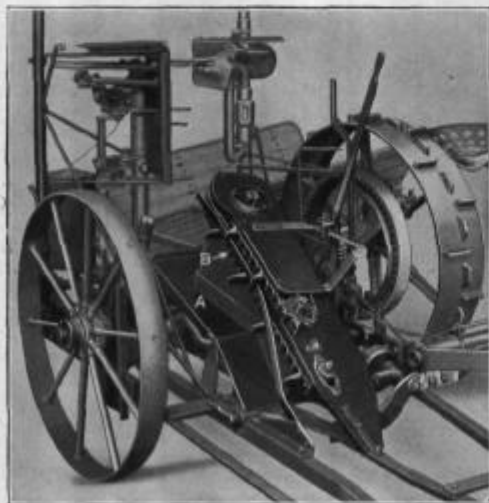
One-Row Ground-Drive Corn Binder



Illust. 1—Internal gear drive with dirt shields partly removed. (A) is pinion which engages the large drive gear. The segment (B) is used in raising and lowering the main wheel.

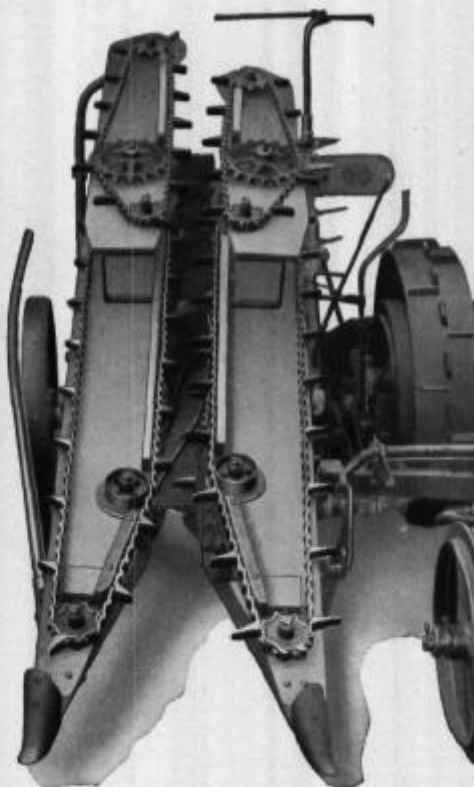
Efficient Gathering—Clean Cutting

The gatherer points are set wide apart so that no stalks will be missed. The gatherer top boards are properly sloped and the gathering chains extend well toward the points to save down and leaning stalks. Three sets of gatherer chains are provided—two butt chains, two lower and two top gathering chains. The butt chains work in conjunction with a long, flat-steel throat spring and support the butts and undergrowth so that a clean cut is made by the sickle. The gathering chains maintain the stalks in an upright position and deliver them properly to the binder head. The lower gathering chains assist also in straightening down and leaning stalks.



Illust. 2—This shows the two butt chains and long throat spring (B) which adjusts itself to the volume of stalks being gathered. (A) indicates the butt pan, adjustable for proper placement of twine band.

Illust. 3—Front view of gathering mechanism partly assembled. Note the wide-spaced gatherer points and the two sets of gathering chains (upper and lower). The butt chains and throat spring, partially visible, are underneath.

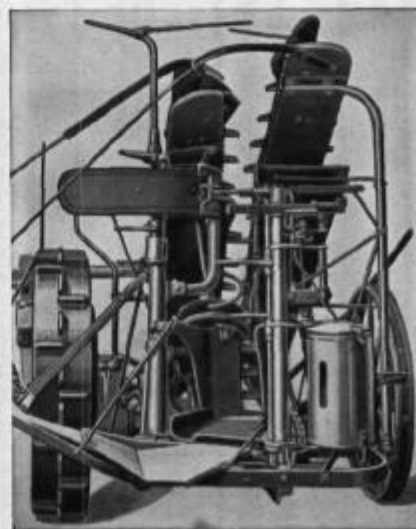


Vertical Binder Head

The vertical binder head forms and ties the bundles while the stalks are in an upright position. This requires less power and permits a smooth, rapid movement of stalks to the binding mechanism. The stalks stand evenly in the butt pan, thus assuring square-butted bundles.

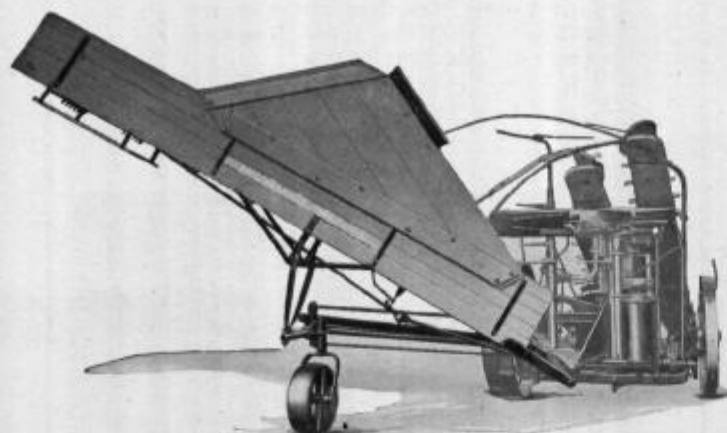
The packers provide a continuous packing action as the stalks are being assembled, forming well-shaped bundles even in the tallest crops. The trip arms are adjustable for regulating the size of bundle. The knotter is noted for its simplicity and tying accuracy.

Illust. 4—Rear view of regular-type binder showing the vertical binder head. The butt pan is in lowest position for tall corn. In this position the twine band will be placed approximately 31 inches above the butts. The twine can, conveniently located, holds two balls of twine.



One-Row Ground-Drive Corn Binder

(Special Equipment)



Illust. 1 — The bundle loader attachment is especially useful for handling crops for the silo.

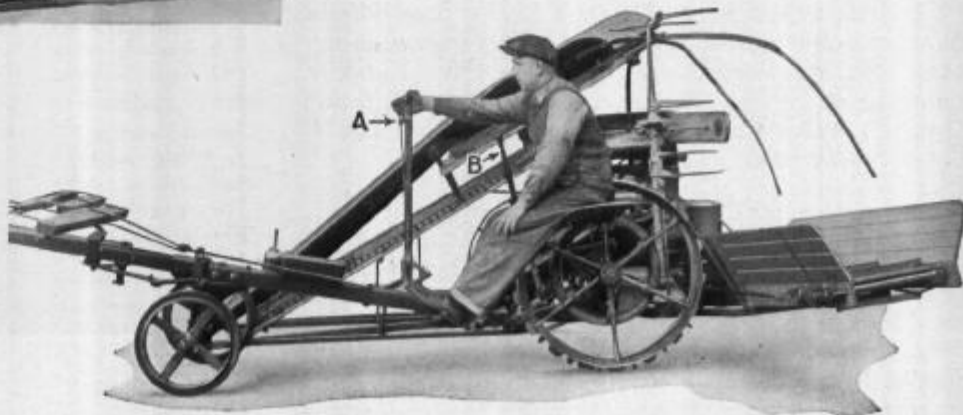


Illust. 2 — The conveyor type bundle carrier avoids running over bundles on the following round.

Illust. 3 — Special low-cut attachment supplied for the regular type binder. It permits cutting just above the ground.



Illust. 4 — The two-wheel tongue truck attachment relieves neckweight and assures steady running over rough ground. Can be supplied with steel wheels, as shown, or with pneumatic-tired wheels. The conveyor bundle carrier shown is also special equipment.



Wagon Bundle Loader

This attachment is especially useful for silo-filling operations. It elevates the bundles and deposits them directly into a wagon thus eliminating heavy lifting and saving time. The entire loader is sturdily built and the weight is carried largely on a caster wheel.

Conveyor Type Bundle Carrier

Available as special equipment to replace the regular drop-type carrier. Operated by means of a clutch controlled by a convenient foot lever, it deposits the bundles in groups well out of the path of the horses or tractor when making the following round.

Two-Wheel Tongue Trucks

Two-wheel tongue trucks, with either steel or pneumatic-tired wheels as ordered, are available as special equipment. The tongue truck relieves neckweight on the horses and helps to keep the binder running straight in adverse operating conditions. The wheels are quick-turning type, making possible short, square turns. Pneumatic tires are 4.00 x 9-in. size.

Low-Cut Attachment

A low-cut attachment, for the regular type binder only, is available as special equipment. It permits cutting corn or forage row crops close to the ground.

Soybean Attachment

This attachment permits binding soybeans and other low-growing row crops with the regular corn binder. Consists of special parts for cutting the crop close to the ground and for elevating the stalks to a higher position on the binder head so that they may be tied properly. It also includes a short binder head.

Other Equipment

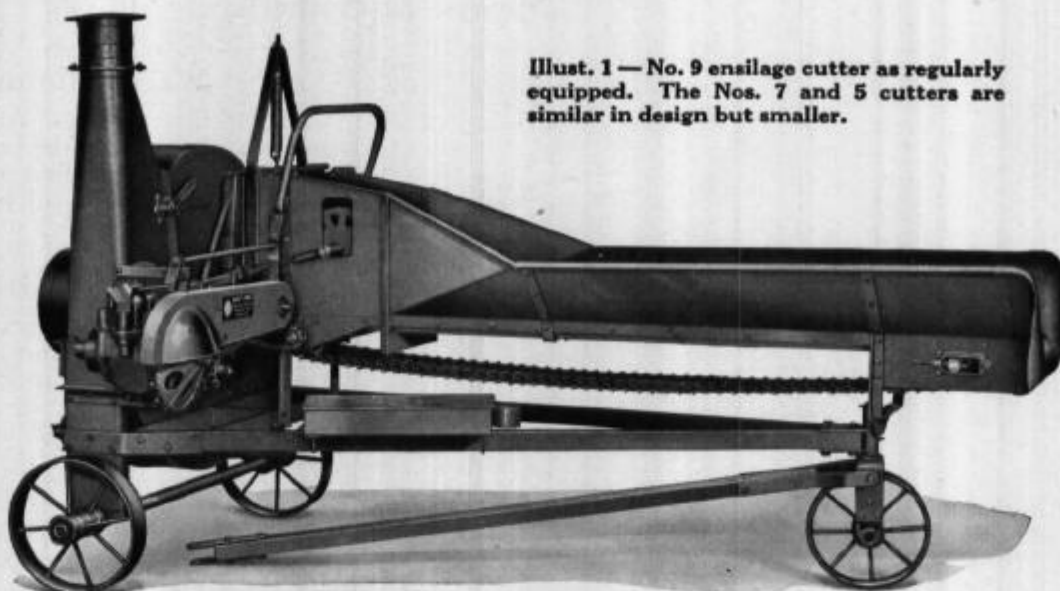
An offset wagon hitch similar to that shown in Illust. 5, page 362, can be supplied for the ground-drive binder. The binder must be equipped with wagon loader and special tractor hitch. A special operator's platform for use with the wagon loader can also be supplied (see Illust. 3, page 362).



Ensilage Cutters—Nos. 5, 7 and 9



Illust. 2 (above)—
These parts are reg-
ularly included
with the machine.



Illust. 1 — No. 9 ensilage cutter as regularly
equipped. The Nos. 7 and 5 cutters are
similar in design but smaller.

- Three sizes meet every need.
- All-purpose cutters—*corn silage . . . grass silage . . . dry hay.*
- Combination feeder handles all crops.
- Minimum power required to operate.
- Blower housing bottom adjustable for maintain-
ing original clearance and high lift.
- Safety devices protect operator and machine.
- Tricycle mounting makes machine easy to set.

The Nos. 5, 7 and 9 ensilage cutters are all-purpose cutters designed for handling all silage crops, either bundle corn or loose grass or hay. Their efficient design enables them to operate at full capacity with a minimum of power. The three sizes are identical in design. The No. 5 is suitable for the man who has a single silo to fill and perhaps a small amount of hay or straw to chop. The No. 7 is suited to medium-size farms; the No. 9 is for larger farms and for custom work.

Regular Equipment

Tricycle type truck with tractor hitch. Steel wheels. Blower flexible joint and deflector. Two knives on flywheel (No. 5). Four knives on flywheel (Nos. 7 and 9). Extra set of knives. Feeder drive sprockets (7, 9 and 12-tooth). Drive pulley—No. 5 cutter, 12-in.; No. 7, 14-in.; No. 9, 16-in.

Special Equipment

Hay attachment. Molasses pump. Knife grinder. Lower feed roll hopper. Parts to obtain 1, 1½ and 2¾-in. cuts. Shredder bars. Two knives and posts to convert No. 5 regular flywheel to 4-knife. Adjustable section for deflector. Pipe equipment. Pneumatic-tired wheels. Special drive pulleys.

(See also pages on *Attachments and Pipe Equipment.*)

Specifications

Description	No. 5	No. 7	No. 9
Capacities—(tons per hour):			
Corn and bundle silage (½-in. cut).....	Up to 15	Up to 20	Up to 30
Loose (grass) silage (½-in. cut).....	Up to 8	Up to 12	Up to 15
Dry hay (1-in. cut).....	Up to 3	Up to 5	Up to 7
Horsepower required.....	Up to 15	Up to 20	Up to 30
Elevating height, ft.....	Up to 100	Up to 100	Up to 100
Flywheel speed, r.p.m.....	Up to 900	Up to 800	Up to 700
Width of feeder conveyor.....	9½-in.	12-in.	15¾-in.
Throat opening (maximum), sq. in.....	65	82	106
Throat width, in.....	10	12½	16½
Throat height, in.....	6½	6½	6½
Flywheel (boiler plate, ball bearings):			
Diameter, in.....	34	40	49
Number of knives.....	2 regular 4 special	4 regular	4 regular
Length of Cut:	(Same for all Cutters)		
7-Tooth Sprocket.....	½-in. (2 knives), ¾-in. (4 knives)		
9-Tooth Sprocket.....	¾-in. (2 knives), 1-in. (4 knives)		
12-Tooth Sprocket.....	1-in. (2 knives), 1½-in. (4 knives)		
Blower pipe diameter, in.....	6	6	7
Distance from ground to top of flexible joint.....	66-in.	68-in.	74-in.
Pulley (Rockwood):			
Size (regular), in.....	12 x 7	14 x 7	16 x 7
Wheels (steel, regular)			
Single front, size.....	14 x 3	14 x 3	16 x 4
Two rear, size.....	14 x 3	16 x 3	20 x 4
Wheels (pneumatic, special)			
Single front, tire size.....	4.00 x 9	4.00 x 9	4.00 x 9
Two rear, tire size.....	4.00 x 9	4.00 x 12	4.00 x 12
Weight, complete with regular equipment.....	1150 lb.	1365 lb.	1765 lb.



Ensilage Cutters—Nos. 5, 7 and 9

All-Purpose Feeder

The feeder is designed for handling efficiently all kinds of silage crops, either in bundle or loose form, as well as cured hay and straw for chopping. Once placed on the feeder, the material is moved automatically to the cutter head without need of an extra man to assist in the feeding operation.

The feed trough is wide and deep with smooth, sloping sides that guide the material evenly to the large-capacity throat. Absence of sharp corners and edges prevents stalks from catching and slowing up the operation. The steel slats of the conveyor apron have turned-up edges to provide a firm grip for positive movement of the material. The full-floating power-driven paddle roll is faced with steel angles that bite into the crop and force it down into the feed rolls, no matter how bulky or stubborn the material may be. The smooth lower roll and the fluted upper roll then feed the material onto the shear bar and into the cutter head.

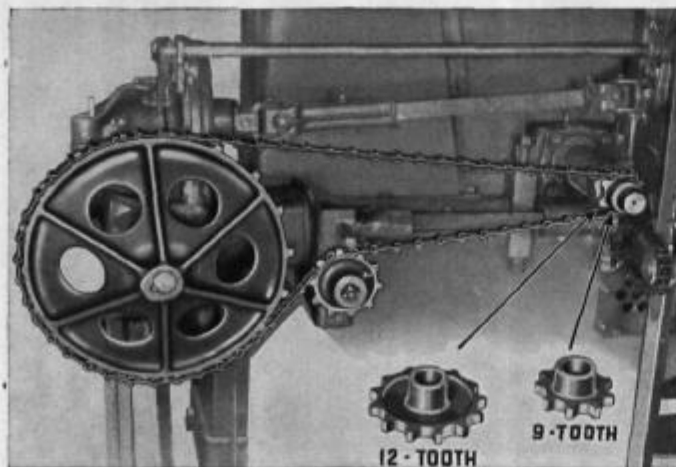
When feeding loose crops, such as grass silage, cured hay or straw, use of the special hay attachment is recommended. It consists of a feeder side board, attachable to either side, and saw-tooth shaped bars for the paddle roll.

Length of Cut Easily Changed

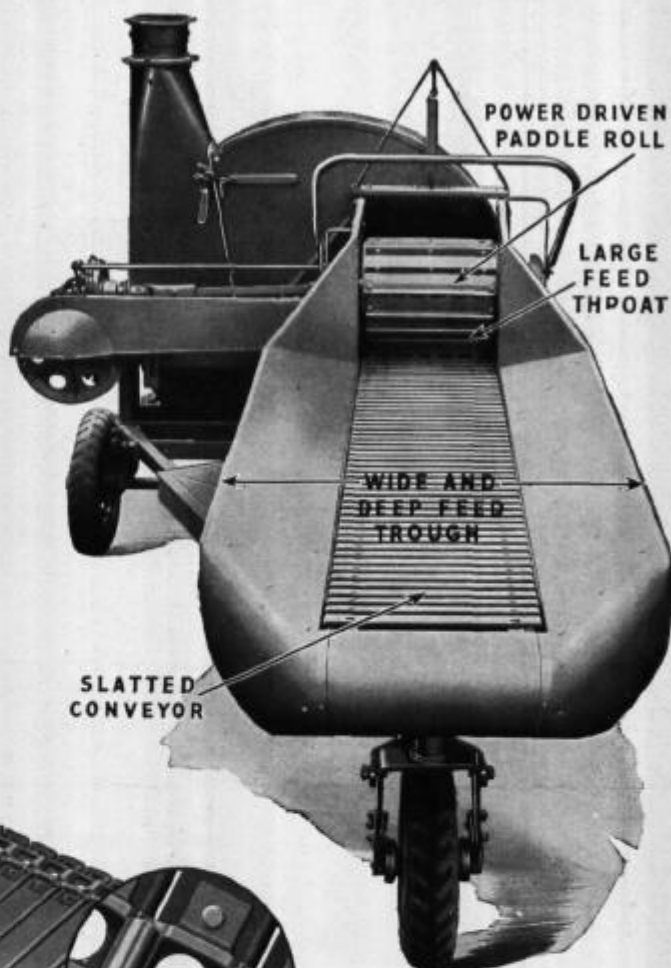
The length of cut is regulated by the size of the sprocket on the flywheel shaft (this determines the travel speed of the conveyor) and by the number of knives on the flywheel. Three sprockets—7, 9, and 12-tooth are regularly supplied with each machine. By interchanging these sprockets the following lengths of cut are obtained:

Sprocket	Two Knives	Four Knives
7-tooth	$\frac{1}{2}$ -in.	$\frac{1}{4}$ -in.
9-tooth	$\frac{3}{4}$ -in.	$\frac{3}{8}$ -in.
12-tooth	1-in.	$\frac{1}{2}$ -in.

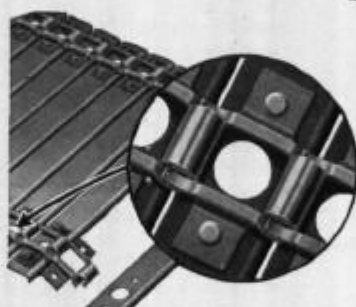
Where greater lengths are desired, a special package of parts is available for cuts of 1, $1\frac{5}{8}$, and $2\frac{3}{8}$ inches.



Illust. 1—The transmission is chain-driven from the flywheel shaft. The 7, 9, and 12-tooth drive sprockets, regularly supplied, are interchangeable to vary the length of cut.



Illust. 2 (above)—End view of feeder showing the features which adapt it to both bundle and loose crops.



Illust. 3—Underside of slatted conveyor. Enlarged section shows the slat holes which provide escape openings for short material that otherwise might build up between the links and cause chain breakage.

Illust. 4—Cross-section view of feeder mechanism showing rear portion of conveyor, the full-floating, power-driven paddle roll, and the upper and lower feed rolls. The shear bar may be seen directly behind the lower feed roll.



Ensilage Cutters—Nos. 5, 7 and 9

Ball-Bearing Flywheel

The flywheel acts as a reservoir of power which drives the feeder, cuts the silage, and blows the cut material to the top of the tallest silo. The flywheels, with their curved fan wings and knife-on-flywheel construction, are carefully balanced and mounted on high-grade, anti-friction, sealed ball-bearings, thus assuring smooth, efficient operation with minimum power requirements. These flywheels are safe at all working speeds. They are made of heavy, $\frac{1}{2}$ -inch boilerplate steel which will not fly apart should some foreign object accidentally get into the blower. A heavy malleable disk forms the hub and provides additional strength and rigidity.

Curved Fan Wings—Electric-welded to steel supports and riveted to the flywheel. Curved design results in air blast and silage being directed straight up the blower pipe. This increases the lifting capacity and materially reduces wear on the blower housing and outlet.

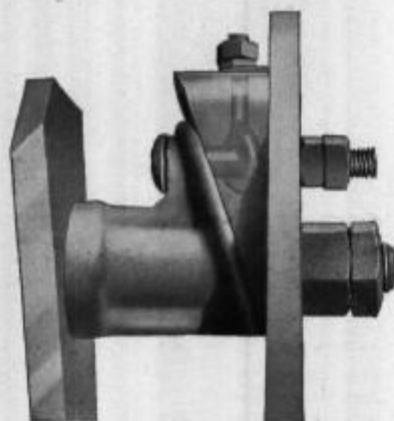
Knives—Made of high-grade tool steel, accurately ground, and with machined collars that seat in knife posts. Each knife is held securely by two large bolts with countersunk heads. Cutting strain is taken by knife posts and not on the bolts.

Knife Adjustment—Each post is fitted with an adjustable wedge block for adjusting the knives quickly and accurately after sharpening. The adjustment is made by means of two bolts. (See Illust. 2.)

Adjustable Side Shear Bars—Two steel bars mounted vertically above the cutter bar. They supplement the main shear bar when cutting large bundles and also act as a safety device to prevent any possibility of knives striking the cutter bar. Adjustable laterally and secured by bolts backed up by setscrews.



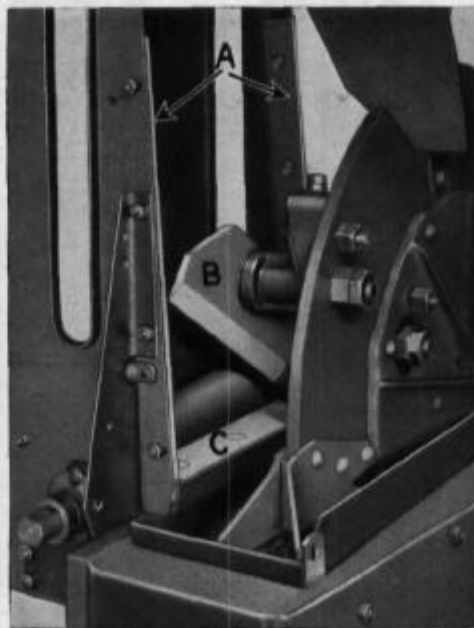
Illust. 1—The flywheels on the No. 7 and No. 9 cutters are regularly equipped with four knives and eight curved fan wings.



Illust. 2—Wedge-type adjustment for resetting knife quickly and accurately after sharpening. Adjusting the wedge downward by means of the eyebolt at the top moves the knife closer to the shear bar. When proper adjustment has been made the bolts are securely tightened and locked.



Illust. 3—The flywheel on the No. 5 cutter is regularly equipped with two knives. Two additional knives can be mounted when desired.



Illust. 4—(A) indicates adjustable side shear bars. (B) is one of cutting knives on flywheel. (C) Main shear bar (cutter bar). The side shear bars prevent any possibility of knives striking the cutter bar.



Ensilage Cutters—Nos. 5, 7 and 9

Adjustable Blower Bottom

The lower half of the blower housing is of heavy steel construction, and is bolted to the rear main frame. Slotted holes are provided for adjusting the bottom section so as to compensate for any wear on the flywheel wings or bottom resulting from long usage. This adjusting feature permits restoring the original clearance between the wings and the bottom so as to maintain full efficiency of the air blast for maximum lift.

Tricycle Mounting

The tricycle (3-wheel) mounting offers distinct advantages. It permits the cutter to be maneuvered easily and set quickly in close quarters. The tongue can be turned in any direction or swung underneath the feeder, out of the way. The machine can be staked down quickly for work or made ready for transporting. In moving, the tricycle mounting permits the cutter to be trailed without slewing or sidesway.

Wheels

These machines are regularly equipped with steel wheels—14-inch diameter rear wheels on the No. 5, 16-inch diameter on the No. 6, and 20-inch diameter on the No. 9. Front wheels are 14-inch diameter, except for the No. 9 which are 16-inch. The wheels cannot interfere with the operation of the belt.

Pneumatic-tired wheels are available as special equipment (see machine Specifications for tire sizes).

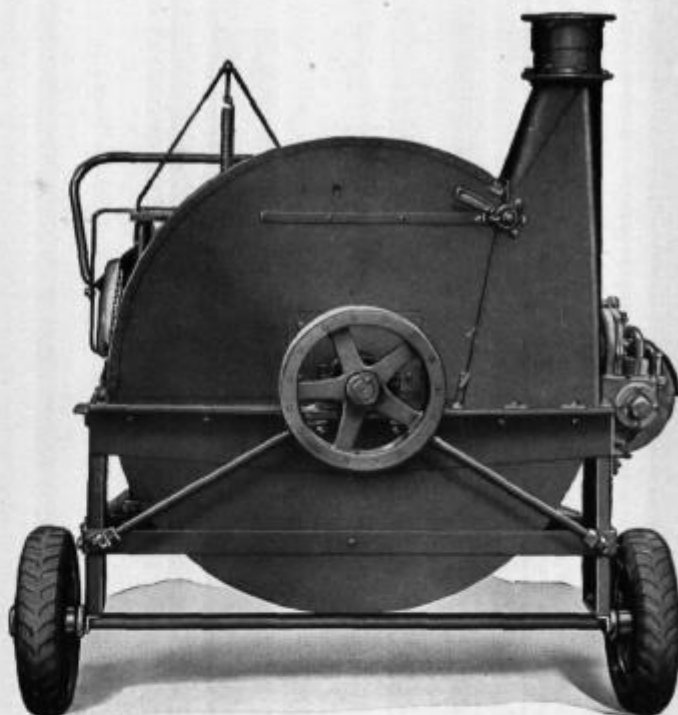
Enclosed Transmission

The feeder drive gear assembly, through which power is transmitted to the conveyor apron and rolls, is fully enclosed and runs in oil.

The sliding clutch is controlled by means of a bail-type lever extending over the rear of the feeder and permits instant starting, stopping or reversing of the feeder mechanism. The bail control is operative from either side of the machine.



Illust. 1—The blower housing bottom section has slotted adjustments which permit raising the bottom to compensate for wear on the ends of the fan wings, thus retaining the original efficiency of the blower.



Illust. 2—The rear main frame is firmly braced so that belt pull cannot cause distortion of the blower housing.

Safety Features



Illust. 3—The bail-type lever permits instant control of the feeder from either side.

- Bail - Type Throwout Control

Possible to stop machine instantly from any position.

- Safety Shear Pins

Protect transmission against breakage.

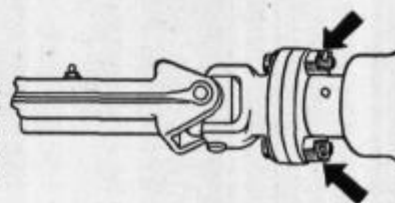
- Self - Cleaning Conveyor Slats

Short material cannot build up between links to cause chain breakage.

- Boilerplate Steel Flywheel

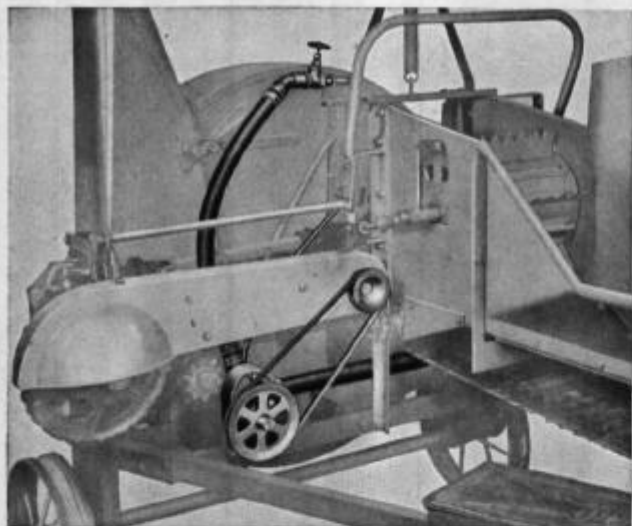
Safe at all working speeds.

Illust. 4—Arrows indicate safety shear bolts which protect transmission gears and feeder.



Attachments for Ensilage Cutters

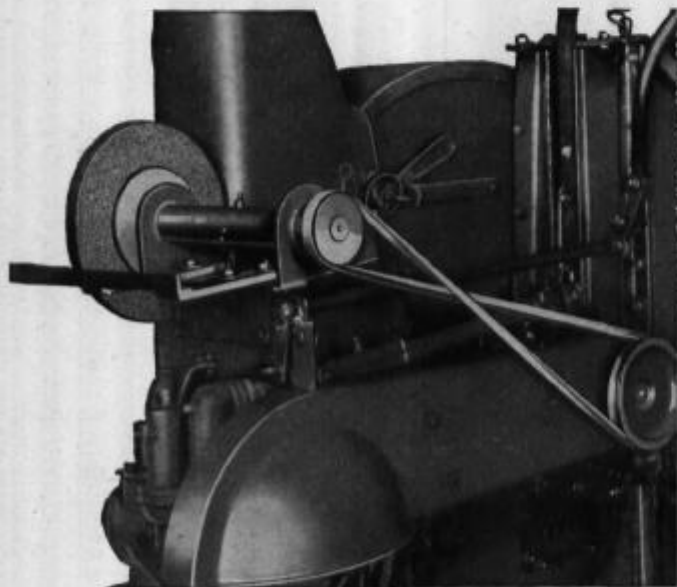
(Nos. 5, 7 and 9)



Illust. 1—The molasses pump attachment provides a clean, convenient method of adding molasses to grass silage in the desired quantity, evenly distributed.

Molasses Pump Attachment

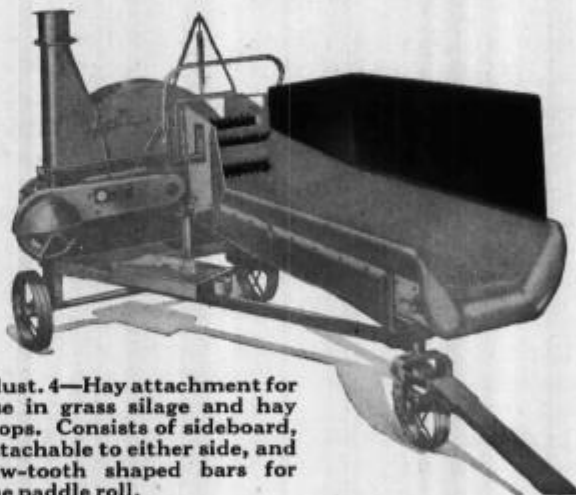
For adding molasses to grass silage simultaneously with the cutting operation. Consists of a gear-type pump which draws the molasses from the barrel and distributes it through hose and feeder tube outlets onto the material passing over the cutter bar. The action of the pump is controlled automatically by the movement of the paddle roll—the pump is engaged when the paddle roll rises and is automatically disengaged as feeding stops and the paddle roll returns to idle position. The volume of molasses distributed is controlled by a convenient gate-type valve.



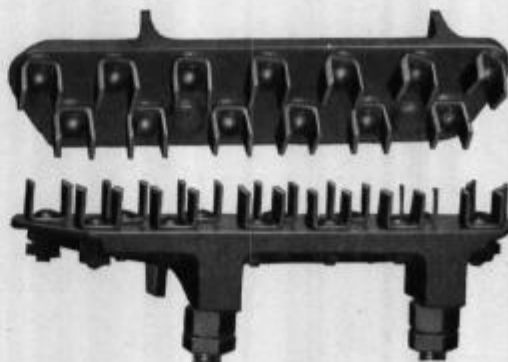
Illust. 2—The knife grinding attachment is readily attached to the machine and is driven by a V-belt from the flywheel shaft while the cutter is in operation. One set of knives can be sharpened while the other is in use.



Illust. 3—Pneumatic-tired wheels are available as extra equipment. See table of Specifications, page 366, for sizes required.



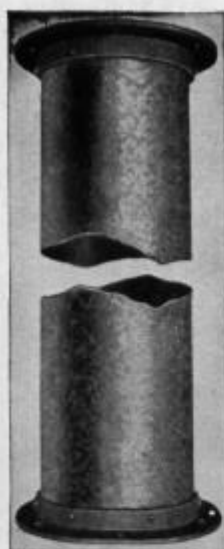
Illust. 4—Hay attachment for use in grass silage and hay crops. Consists of sideboard, attachable to either side, and saw-tooth shaped bars for the paddle roll.



Illust. 5—Shredder bars for shredding corn fodder. Two bars comprise a set. These bars interchange with the regular cutting knives. Usual arrangement is two shredder bars and two knives.



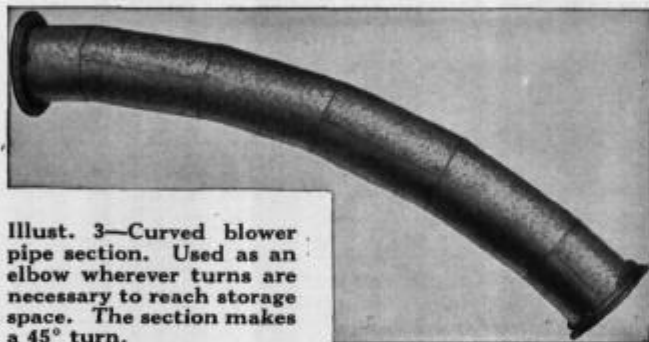
Pipe Equipment for Ensilage Cutters



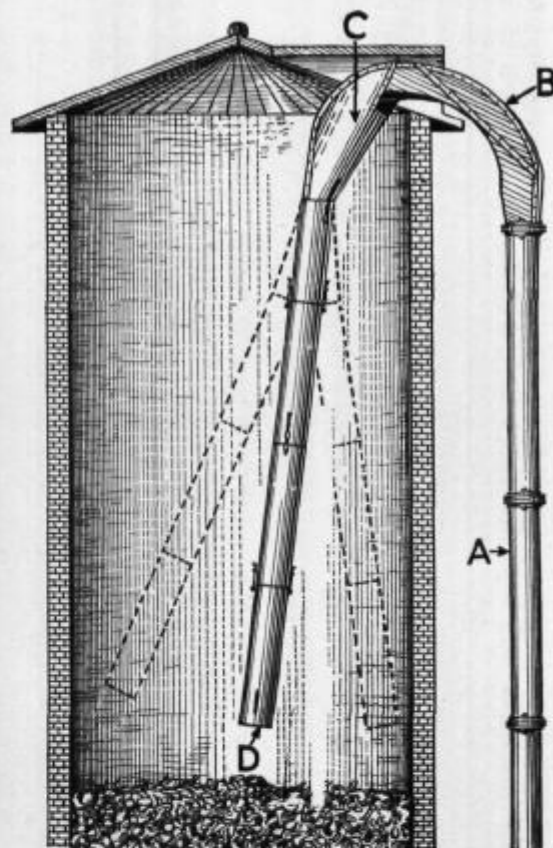
Illustr. 1—Standard blower pipe, available in lengths and diameters as shown in table below.



Illustr. 2—Blower telescoping section. The clamp-type flange permits adjusting the length anywhere from 4 to 7 feet.



Illustr. 3—Curved blower pipe section. Used as an elbow wherever turns are necessary to reach storage space. The section makes a 45° turn.



Illustr. 5—Diagram showing arrangement of blower pipe and distributor in filling a silo. (A) indicates blower pipe; (B) deflector; (C) distributor hopper; (D) distributor pipe joints or sections.

Blower Pipe

Description	Nos. 5 and 7 (6-in. dia.)	No. 9 (7-in. dia.)
1 ft. section.....	6 lb.	7 lb.
4 ft. section.....	14 lb.	15 lb.
6 ft. section.....	18 lb.	20 lb.
8 ft. section.....	23 lb.	27 lb.
10 ft. section.....		30 lb.
8 ft. telescoping section.....	29 lb.	32 lb.
Curved section (45° elbow).....	17 lb.	18 lb.

All weights approximate.



Illustr. 4—The hinged adjustable section, shown at upper end of deflector, is special equipment for use in filling pit and crib silos or when blowing chopped hay into the mow.



Illustr. 6—This shows the deflector with distributor hopper and 2-ft. top joint.

Distributor Pipe

(For all ensilage cutters)

Description	Weight (Approx.)
Distributor pipe (3-ft. sections).....	8 lb.
Hopper and top joint.....	25 lb.
Top joint only (2-ft.).....	7 lb.



Illustr. 7 — The distributor pipe is made in 3-foot sections of heavy, galvanized sheet steel with reinforced ends.

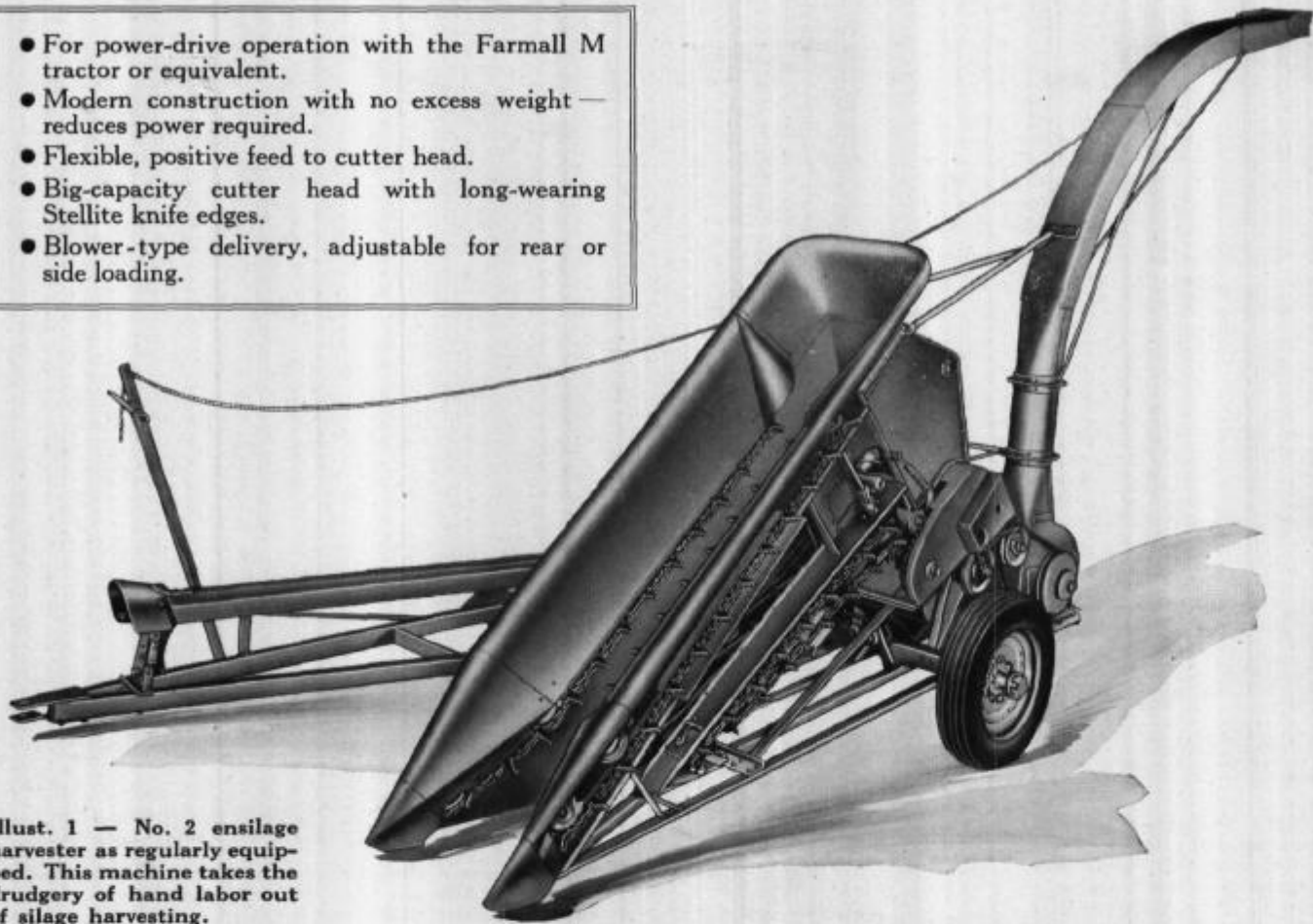


INTERNATIONAL HARVESTER



No. 2 Ensilage Harvester

- For power-drive operation with the Farmall M tractor or equivalent.
- Modern construction with no excess weight — reduces power required.
- Flexible, positive feed to cutter head.
- Big-capacity cutter head with long-wearing Stellite knife edges.
- Blower-type delivery, adjustable for rear or side loading.



Illust. 1 — No. 2 ensilage harvester as regularly equipped. This machine takes the drudgery of hand labor out of silage harvesting.

The No. 2 ensilage harvester greatly reduces the labor and cost of harvesting silage crops. This machine cuts the standing corn, or other row-crops grown for silage, into short lengths and delivers them directly into a wagon trailed behind the machine or into a truck or wagon driven alongside. The blower-type delivery can be easily adjusted for making delivery to the rear or to the side. The entire outfit, consisting of tractor, ensilage harvester and trailing wagon (when used), is operated by one man.

Power Requirements

The Farmall M or tractors of approximately the same power can operate the No. 2 ensilage harvester in virtually all crop and field conditions.

Every element of modern machine design has been incorporated to hold the power requirement of the No. 2 to a minimum. Strong, lightweight metal and welded construction reduces weight; pneumatic tires, and liberal use of ball bearings, enclosed oil-bath gear drives, roller chains and V-belts all add up to an easy-running ensilage harvester.

Regular Equipment

Less tractor power-drive connection and hitch. Wheels with pneumatic tires — 5.50 x 16-in. 4-ply. Blower-type delivery, adjustable for rear or side loading. Rear hitch for wagon. Parts to give $\frac{1}{16}$ -in.-length cut.

Special Equipment

Special parts and sprocket for obtaining $\frac{1}{16}$ -in.-length cut. Stalk lifters for Farmall tractors. Front wheel steering stop for Farmall tractors. Power-drive connection and tractor hitch as listed below.

Power-Drive Connections and Tractor Hitches

(For tractors with standardized power take-off)

ZMA-689 for tractors with $1\frac{1}{2}$ -in. splined shaft.

ZMA-717 for tractors with $1\frac{3}{4}$ -in. splined shaft.

Note: Special conversion packages can be obtained for converting tractors equipped with non-standardized power take-off to A.S.A.E. standards. Power-drive hitches, as listed above, can then be used with such converted tractors.

Specifications

Range of cutting height.....	3 to 6 in.
Cutter head.....	4 knife
Diameter.....	14 in.
Width.....	14 $\frac{1}{4}$ in.
R.P.M.....	1,500
Length of cut (regular).....	$\frac{7}{16}$ in.
Length of cut (special).....	$\frac{5}{16}$ in.
Wheel tread, C. to C.....	6 ft. 3 $\frac{1}{2}$ in.
Over-all width.....	7 ft.
Over-all length, with elevator.....	22 ft.
Over-all length, less elevator.....	13 ft.
Over-all height, with elevator.....	8 ft.
Over-all height, less elevator.....	6 $\frac{1}{2}$ ft.
Net weight, approximate.....	1540 lb.



INTERNATIONAL HARVESTER



No. 2 Ensilage Harvester

(Continued)

Advantages of the Ensilage Harvester Method

Saves Time: Only one operation is required to transform the standing crop into ensilage lengths, loaded and ready for the silo.

Saves Labor: One man operates the entire outfit, consisting of tractor, ensilage harvester, and wagon (when trailed behind). Haulers and a man to tend the blower at the silo are required in addition. Contrast this with the much larger crew ordinarily required for silo-filling when handling bundled corn in the field and at the silo.

Eliminates Drudgery: The hard work of lifting and handling heavy green corn bundles (usually estimated as 10 to 15 tons per acre) is entirely eliminated. No manual work whatsoever is required to handle the crop from the time it is cut until it is loaded in the wagon or truck.

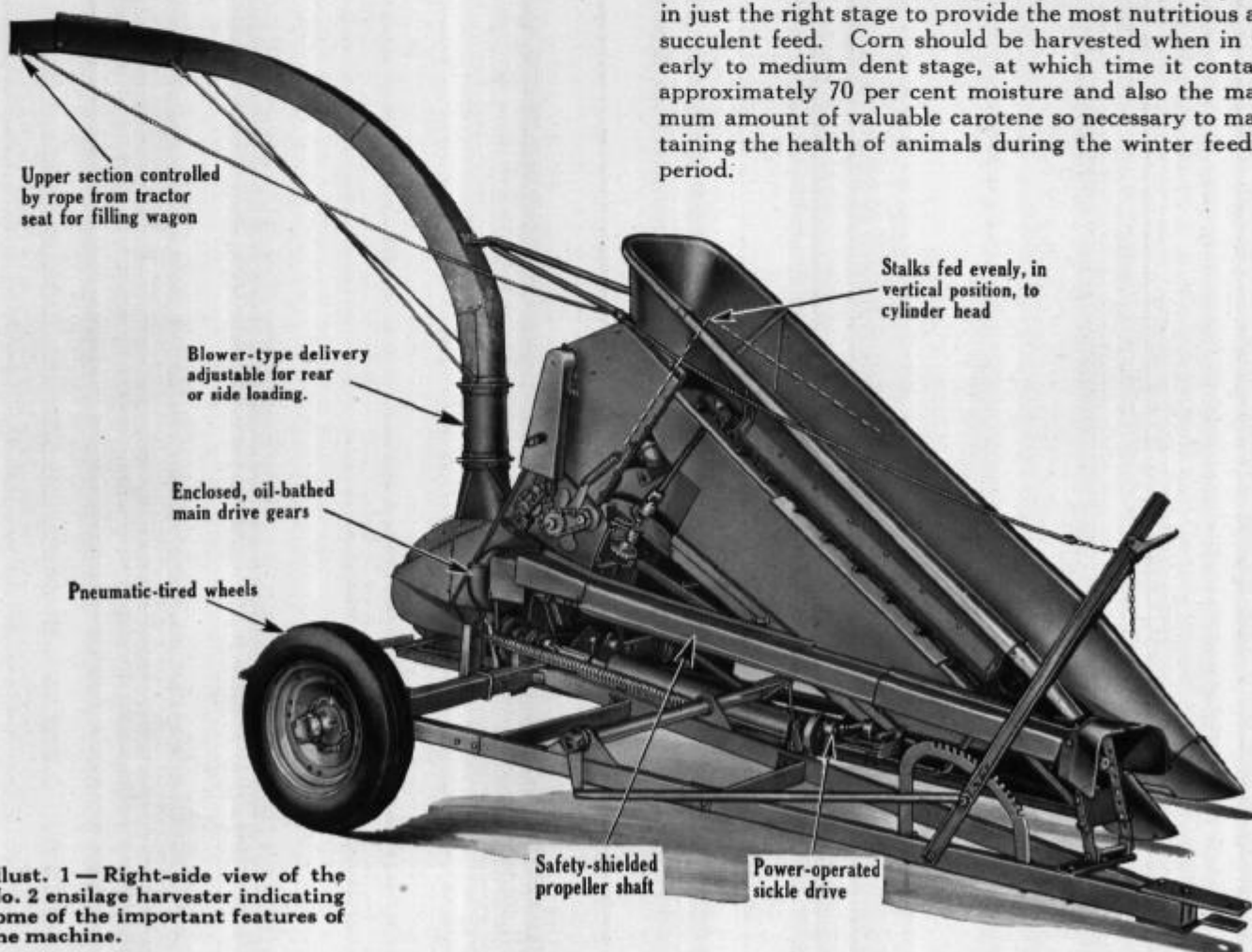
Saves Twine Expense: No twine is required when crops are harvested and field-chopped with the ensilage harvester.

Assures Clean Silage: Stalks never touch the ground, as there is no dirt on the butts or contaminating soil bacteria to promote spoilage.

No Loss of Valuable Elements: All the valuable moisture and carotene content of the plants are saved, because the harvested crop does not lie in the field exposed to sun and weather. With the ensilage harvester it is but a matter of minutes until the crop is safely stored in the silo. All the natural goodness is retained to assure a superior feed.

Provides a Better Pack: The blower fan at the delivery end of the machine imparts a shredding and mixing action to the silage lengths. This results in a product that will pack solidly in the silo, with no air pockets to promote mold. Such a pack retains moisture evenly and assures uniform feeding value from any part of the silo.

Permits Timely Harvesting: The ensilage harvester method, requiring little or no outside help, enables owners to harvest their silage crops when the crops are in just the right stage to provide the most nutritious and succulent feed. Corn should be harvested when in the early to medium dent stage, at which time it contains approximately 70 per cent moisture and also the maximum amount of valuable carotene so necessary to maintaining the health of animals during the winter feeding period.



Illust. 1 — Right-side view of the No. 2 ensilage harvester indicating some of the important features of the machine.



INTERNATIONAL HARVESTER



No. 2 Ensilage Harvester

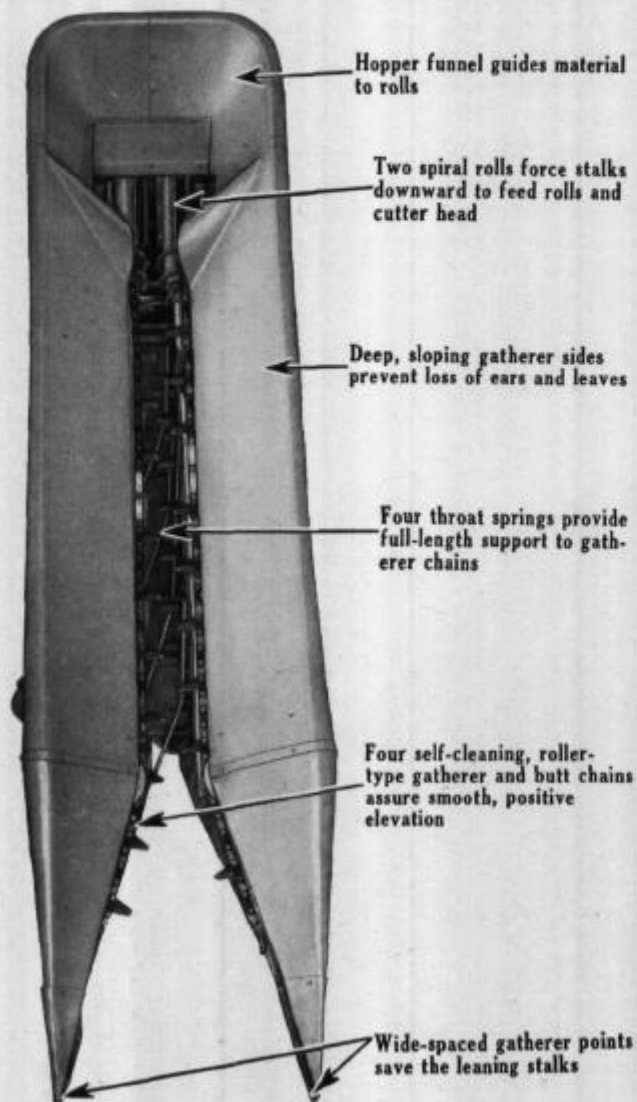
(Continued)

Clean Cutting

The cutting mechanism consists of a reciprocating knife section working in conjunction with two stationary knives. This assures efficient cutting of all stalks and undergrowth. The knife is operated by a steel pitman from a crank on the connecting shaft.

Efficient Gathering Mechanism

The gatherer unit is designed to handle the stalks rapidly and efficiently at tractor travel speeds. The points are wide-spaced, making it easy to follow the row without missing any stalks. The sides and hopper funnel are of sheet steel with rounded edges, assuring a smooth flow without loss of valuable leaves or ears.



Illust. 1 — Looking down into the feed throat of the gathering unit. The gatherer chains are a special roller type, self-cleaning and light in weight. Four throat springs hold the stalks firmly against the butt chains, throughout their travel. The two spiral rolls located above the gatherer chains force the stalks downward to the feed rolls and cutter head.

Two gatherer and two butt chains are provided. The chains are a special roller type — self-cleaning and highly durable though relatively light in weight. Four throat springs, extending the full length of the butt pan, hold the stalk butts firmly against the gatherer chains. The springs are adjustable for different crops.

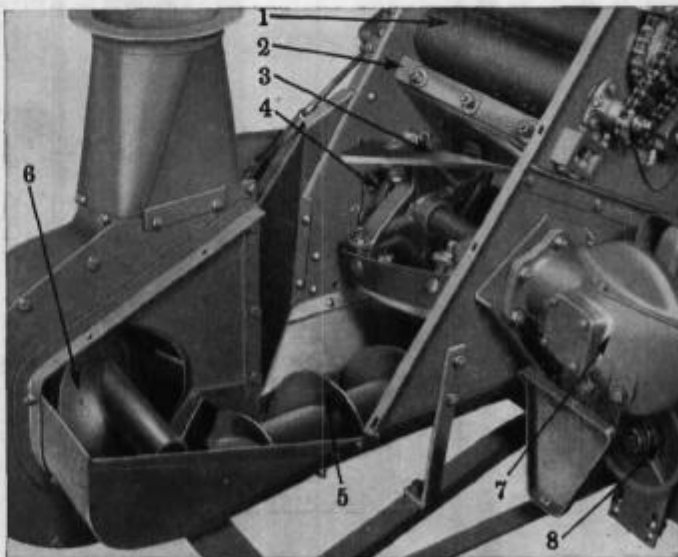
Positive Feed

The severed stalks, held upright between the gatherer chains, are moved upward on the butt pan to the hopper funnel. Here the butts are engaged by two spiral rolls which force the stalks downward to the feed rolls. The feed rolls consist of three fluted and one smooth roll. The large fluted roll is free to float under spring pressure, adjusting itself automatically to the volume of feed. The rolls provide a positive, constant-rate feed to the cutter head so that uniform lengths of cut are always obtained.

Cutter Head with Stellite Knife Edges

The cutter head is comprised of four heavy, spirally-arranged cutting knives. These knives (and also the cutter bar) have extra-hard, non-rusting edges made of Stellite. As a result, the knives remain sharp four times longer than ordinary ply-steel knives. The edges may be touched up with a carborundum stone, when necessary, without removing the knives from the machine.

The cutter head is carefully balanced and runs on ball bearings. Because it rotates in line with the downward flow of stalks, greater cutting capacity with less power is assured.



Illust. 2 — Rear view of machine showing cutter head and delivery augers. (1) smooth feed roll. (2) cutter bar with Stellite edge. (3) spiral-shaped cutting knife with Stellite edge. (4) ball-bearing mounted cutter head. (5) feed auger. (6) cross auger leading to blower. (7) main drive transmission — enclosed and oil-bathed. (8) V-belt sickle drive pulley.



No. 2 Ensilage Harvester

(Continued)

Two Lengths of Cut

The machine is regularly equipped to give a $\frac{3}{16}$ -inch length cut. Special parts to give a $\frac{5}{16}$ -inch cut can be supplied as special equipment.

Auger Feed to Elevator

The cut material falls into a trough from where it is delivered by means of a short open-end auger to a cross auger leading into the blower. These augers assure positive delivery at all times and avoid any possibility of clogging.

Blower-Type Delivery

The No. 2 ensilage harvester is equipped with a blower-type delivery spout which loads the cut material into a wagon or truck. It is powered by a 6-bladed blower fan. The delivery spout has an adjustable deflector which is rope-controlled from the tractor seat. This enables the tractor operator to direct the cut silage to any part of the wagon or truck box for uniform loading.

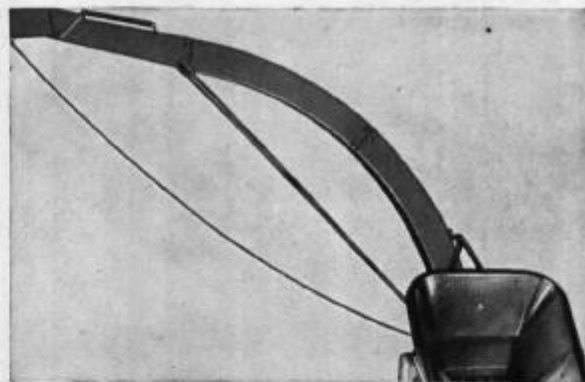
Power to drive the fan is furnished directly from the cutter head shaft by a V-belt, especially designed to prevent stretching. The blower is provided with an over-running clutch which allows the fan to continue turning whenever the tractor is stopped and the power take-off disengaged. This insures that the blower housing is clean, so it does not increase the load when the tractor is started.

Rear or Side Delivery

The elevator can be readily adjusted for making delivery either at the rear into a wagon trailed behind the machine, or to the side, into a wagon or truck driven alongside. The point of delivery may be changed by turning the blower outlet top pipe.

Pneumatic-Tired Wheels

Pneumatic-tired disk wheels are regular equipment. They reduce draft, help protect the machine and permit



Illust. 1 — Elevator spout set for side delivery. The spout can also be set for delivering rearward into a trailing wagon.

fast transportation over hard-surface roads. Tires are 6.00 x 16-in., 4-ply.

Efficient Drives — Safety Shielding

Power from the tractor is delivered through the propeller shaft direct to the enclosed transmission gears which drive the cutter head. The connecting shaft, which operates the knife, is driven by a V-belt from the propeller shaft. The blower fan is driven by a V-belt, other drives of the machine by roller chains. All drives are sturdy, simple, and designed for maximum efficiency.

The power-drive shaft and sliding propeller shaft are fully shielded in accordance with A.S.A.E. safety standards. Chain drives, which otherwise might be subject to contact, are also provided with approved shielding.

Safety Devices

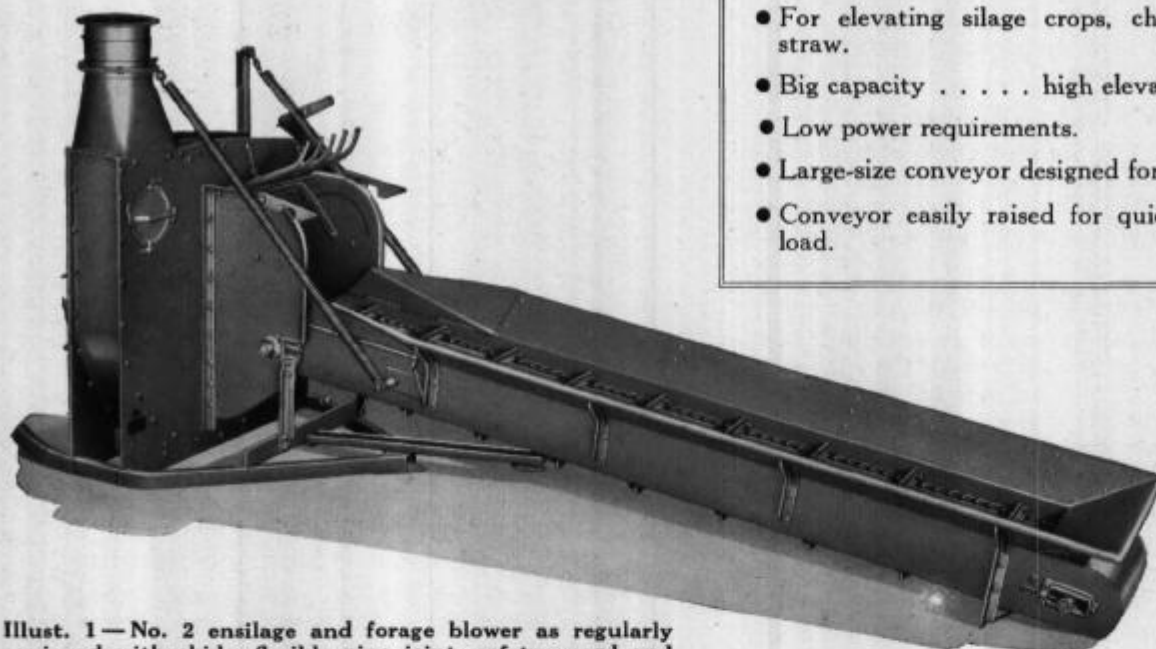
To protect the machine against damage from clogging, a slip clutch is located on the gatherer countershaft, and a shear pin secures the sprocket from which the feed rolls are driven.



Illust. 2 — From his position on the tractor seat the operator has control of the entire outfit including the loading of the wagon trailed behind. A rope control enables him to regulate the deflector on the elevator spout so as to distribute the material to any part of the wagon desired.



No. 2 Ensilage and Forage Blower



Illust. 1—No. 2 ensilage and forage blower as regularly equipped with skids, flexible pipe joint, safety guard and 11 x 7-inch Rockwood pulley.

The No. 2 ensilage and forage blower is designed as a companion machine to the ensilage harvester for elevating field-chopped silage into the silo. The blower is also well suited to elevating chopped hay and straw into overhead mows, thus eliminating the usual hard work of loading and pitching hay or straw in a dusty mow.

The No. 2 blower will elevate to a height of 100 feet and will handle up to 15 tons of corn silage, 12 tons of grass silage, or 8 tons of dry hay per hour.

The Farmall H tractor, or its power equivalent, will operate the blower at full capacity under normal conditions. The dynamically balanced rotor is mounted on tapered roller bearings, for light running. Modern design and engineering improvements assure a sturdy, big-capacity machine with minimum weight.

Regular Equipment

Flexible pipe joint. Rockwood pulley, 11 x 7-in. Safety guard. Leveling device. Skid mounting with hitch. 9-ft. conveyor with manually controlled throw-out clutch.

Special Equipment

Blower pipe, 8-in. diameter, in 1, 4, 6, and 8-ft. lengths. Telescoping pipe section, 8-in. diameter—(adjustable from 4 to 7-ft.). Flexible elbow, 90°. Deflector with or without adjustable section, as specified. Distributor hopper. Distributor top joint, 2-ft. Distributor pipe in 3-ft. lengths. Molasses pump attachment. End feed trough attachment. Transport attachment with pneumatic tires (6.00 x 16-in.) Transport attachment less tires.

- For elevating silage crops, chopped hay and straw.
- Big capacity high elevation.
- Low power requirements.
- Large-size conveyor designed for easy unloading.
- Conveyor easily raised for quick placement of load.

Specifications

Maximum capacity (tons per hour).....	Corn, up to 15 Grass silage, up to 12 Dry hay, up to 8
Horsepower required (for above capacity).....	Farmall H tractor or its equivalent
Elevating height.....	Up to 100 ft.
Rotor speed.....	800 to 1000 rpm.
Rotor (boiler plate, ball bearing) diameter.....	40 in.
Number of rotor wings.....	6
Conveyor dimensions.....	9 ft. long, 30 in. wide at top
Conveyor (chain with rubber-faced slats) . . .	16 in. wide at bottom
Blower pipe diameter.....	8 in.
Pulley (Rockwood) size.....	11 x 7 in.
Weight (less piping).....	858 lbs.

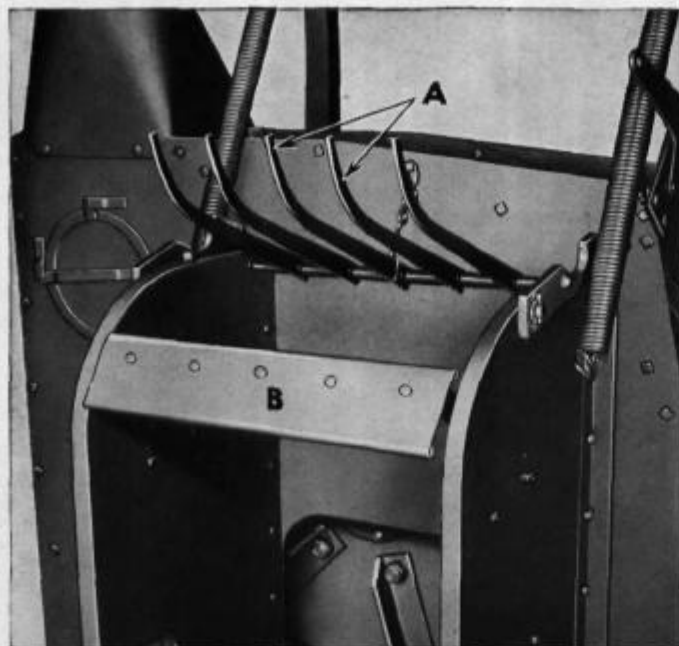


Illust. 2—The conveyor is easily raised to a full vertical position. This permits driving the load into position without backing or jockeying.



No. 2 Ensilage and Forage Blower

(Continued)



Illust. 1 — Blower with conveyor removed to show feed inlet. "A" indicates 5-fingered safety guard which prevents objects from falling into machine. "B" is adjustable leveling bail for regulating feed, particularly in corn.

Conveyor Designed for Easy Unloading

The feed conveyor is 30 inches wide across the top and 16 inches at the bottom, and is 9 feet long. This generous size assures plenty of room for unloading the widest truck or wagon box without spilling over the end. It also allows a greater leeway in positioning the load. The conveyor is adapted to fast, easy unloading, either by hand or by mechanical power such as with a tilting dump body, a power-driven unloading conveyor built integral with the truck, or by pulling off the load by means of a cable fastened to a false front on the truck or wagon.

The conveyor apron is slatted-chain type and is controlled manually by means of a convenient throw-out clutch. The slats are steel and are rubber-faced to assure aggressive feeding action and long life.

Leveling Device

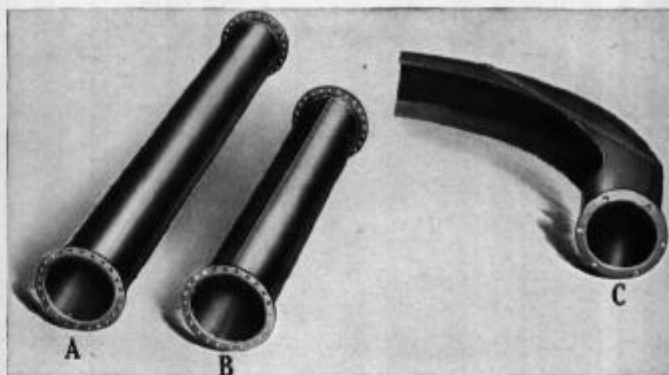
An adjustable leveling bail, located above the inner end of the conveyor, helps to regulate feeding into the blower. It is particularly useful for corn silage. The bail is adjustable to three positions, or it may be swung out of the way.

Safety Guard

A 5-fingered throat guard serves as a safety measure to prevent objects from falling into the feed opening. It also prevents pitchforks from coming in contact with the inlet when feeding.

Efficient Rotor

Much of the working efficiency of this machine is directly attributable to the design of the rotor. The



Illust. 2 — Blower and distributor pipe equipment for the No. 2 blower is similar to that furnished for ensilage cutters (see page 371) and is supplied only as ordered. "A" is 6-ft. length of blower pipe; "B" is 4-ft. length and "C" is deflector less adjustable section. Illustration below shows the telescoping pipe section, adjustable from 4 to 7 feet. All blower pipes are 8-in. in diameter.

rotor is made of $\frac{1}{2}$ -inch boiler-plate steel, 40 inches in diameter. It is equipped with 6 steel fan blades especially designed for high lift and elevating capacity. The entire assembly is dynamically balanced and mounted on tapered roller bearings for smooth, easy operation.

Skid or Wheel-Equipped

The machine is regularly mounted on steel skids and is provided with a hitch so that it may be readily moved about. Where it is necessary to transport the machine frequently over highways, a transport wheel attachment can be used. This attachment is supplied as special equipment, either with or without tires, as ordered.



Telescoping pipe section.



Illust. 3 — The 9-ft. conveyor provides ample room for unloading wide trucks without spilling.



INTERNATIONAL HARVESTER

PRINTED IN UNITED STATES OF AMERICA — MARCH 1949





No. 24 Corn Picker

(Two-Row, Farmall-Mounted)



Illust. 1 — No. 24 corn picker ready to operate in the field. Note its low, trim design and straight-through picking and elevating units.

- Big capacity—picks up to 20 acres a day.
- On or off in 15 minutes.
- Opens fields without running over unhusked rows.
- Light weight — weighs less than 2000 lbs.
- Compact design — three working units, fewer parts, only 4 rolls.

The No. 24 corn picker is of latest design incorporating many new features. It is a fast-working, lightweight machine for mounting on Farmalls H, M, or MD. Among its outstanding features are quick-mounting, trim, compact design and maneuverability. It offers all of the advantages of a self-propelled machine, such as quickly opening fields without running over unpicked rows. The corn picking units can be quickly detached; thus the tractor is not tied up during the entire corn picking season.

The No. 24 will harvest efficiently at speeds up to $3\frac{1}{2}$ m.p.h. or at rates up to 3 acres an hour in better than average crops. The picking units on the No. 24 are amply wide to accommodate the heaviest hybrid stalks and crops. The aggressive snapping rolls are of ample capacity to handle the crop at fast tractor speeds.

The No. 24 corn picker is a lightweight machine, weighing less than 2,000 pounds. The weight of the picker is well distributed to afford maximum traction and proper balance.

Regular Equipment

Inserts for snapping rolls with wrench for installing.
Husking rolls with rubber husking inserts.
Attaching parts for Farmalls H, M or MD.
Hydraulic Lift-All connecting parts for Farmalls H, M, or MD. (Lift-All pump and cylinder not included.)
Engine shield parts. Adjustable stands for main frame and snapping and husking unit. Trash rolls.
Tractor mounting step.

Special Equipment

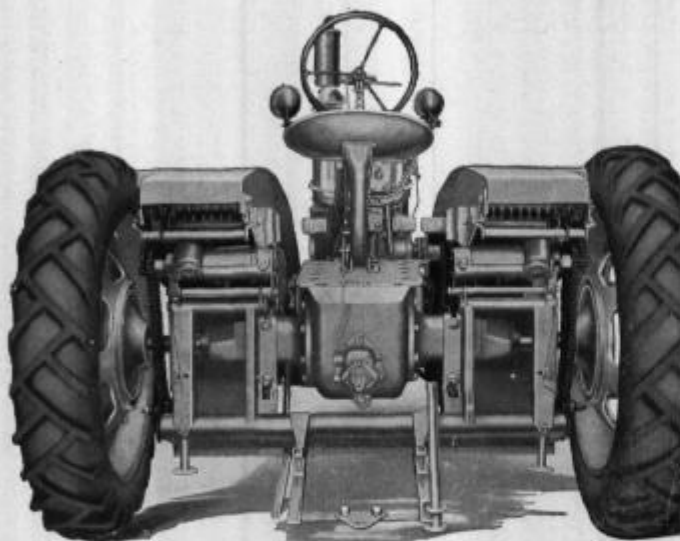
Hinged tongue parts. Special hydraulic cylinder control rod (for Farmall-H tractors). Special hydraulic cylinder control rod (for Farmall M and MD tractors). Wagon box side extension. Trash deflector attachment. Mud deflector. Wagon elevator top shield. Snapping roll set screws. Fast cleaning fan drive sheave. Supplemental husking roll beater.

Specifications

DESCRIPTION	Net Weight (Approx.)
No. 24 regularly equipped.....	1995 lb.



No. 24 Corn Picker



Illust. 1 — Rear view of the picking units showing the attaching parts and method of mounting. Note the low-cut design and direct drives.

Low, Compact Design

The No. 24 corn picker is a low-built, compact machine with the advantages of convenience, safety, maneuverability, proper weight distribution, more efficient operation on sidehills, and shorter, more direct drives.

All necessary adjustments such as raising or lowering the picking units, actuating the elevator, etc. may be made from the tractor seat. The driver sits well above all moving parts, where he can see all essential operations of the machine.

The No. 24 corn picker is equipped with shields to prevent the winding of trash and stalks, and to protect the operator. The machine is well balanced with its center of gravity carried low for safe sidehill operation.

The machine can be readily maneuvered in close quarters and easily turned on headlands. Its narrow width allows it to pass through 8-foot gates and narrow driveways.

The weight of the picker is properly distributed upon the front and rear wheels of the tractor so that easy steering and maximum traction is assured.

The compact design makes possible simple, direct drives throughout. This assures efficient operation with minimum weight.

On and Off Quickly

With the No. 24 corn picker, mounting time is cut to a matter of minutes. It takes approximately 15 minutes to attach or detach the picker with very little lifting required. Self-contained jacks and stands hold the working units at the correct height for ready attaching. This quick-change feature means that the tractor can be quickly released for other farming operations whenever desired.

Once set up for mounting, the units of the No. 24 are quickly placed into position. The first step is the attaching of the wagon elevator unit. This is done by backing the tractor up to the wagon elevator and attaching it to the rear axle housing of the tractor. Sturdy jacks and stands hold the elevator at the proper height for easy attaching without lifting.

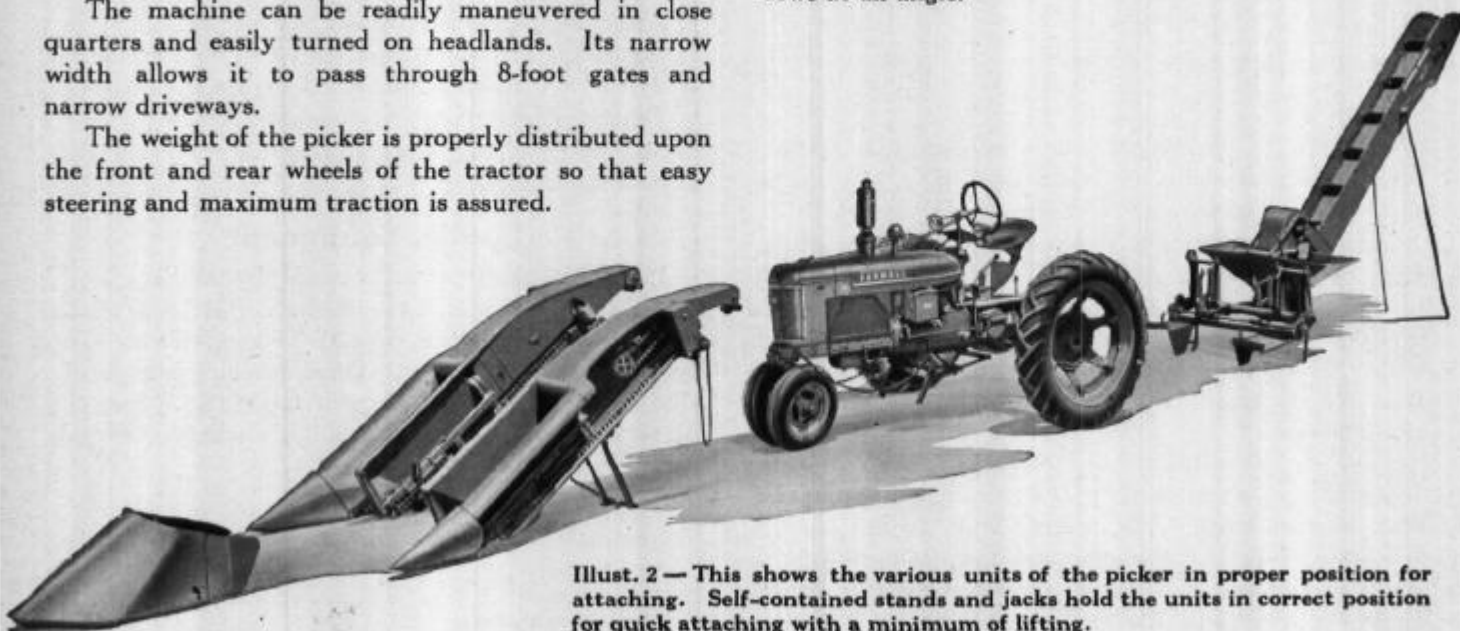
The next step is to drive the tractor between the picking units, attach and connect them by means of the lifting bracket pipe, and make the necessary attachments for Lift-All operation.

Finally, attach the steerable divider.

To detach, a similar reverse procedure is followed. The units when detached are easily stored in a minimum of space.

Opens Fields Anywhere

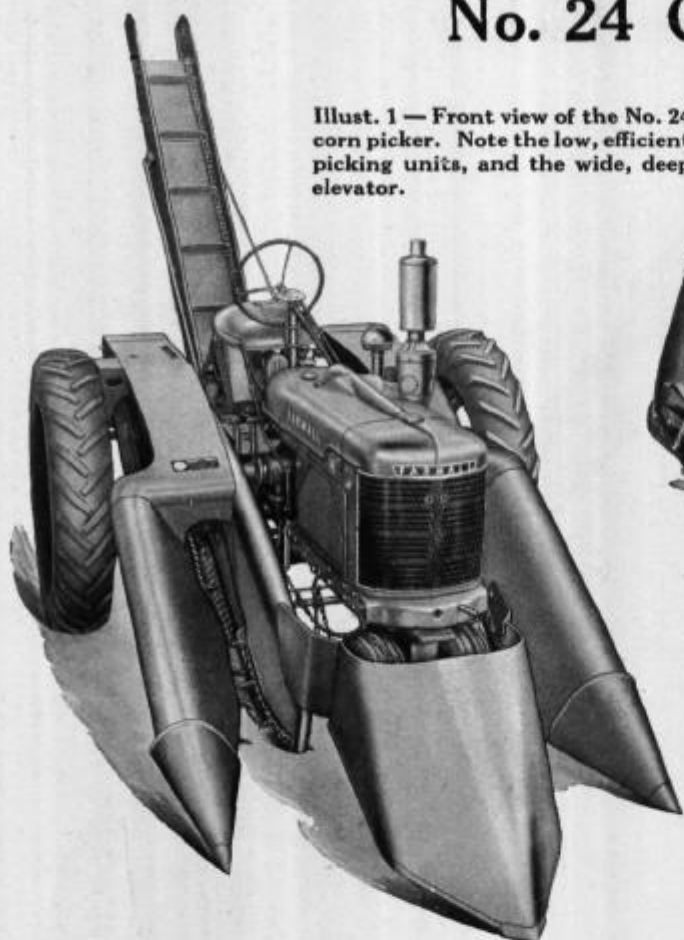
The No. 24 corn picker easily opens a field at any desired location, without running over unpicked rows. The mounted units fit snugly to the tractor, and the steerable divider permits the tractor to enter the corn rows at an angle.



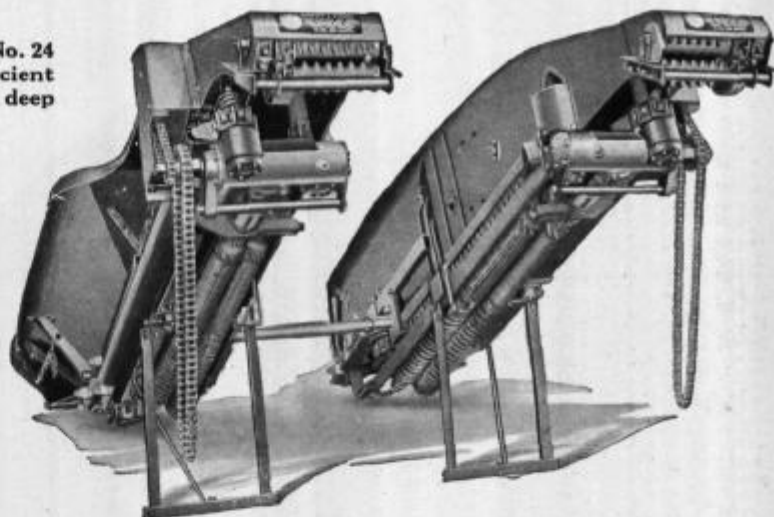
Illust. 2 — This shows the various units of the picker in proper position for attaching. Self-contained stands and jacks hold the units in correct position for quick attaching with a minimum of lifting.



No. 24 Corn Picker



Illust. 1 — Front view of the No. 24 corn picker. Note the low, efficient picking units, and the wide, deep elevator.



Illust. 2 — Rear view of picking units ready for mounting. Stands are regular equipment.

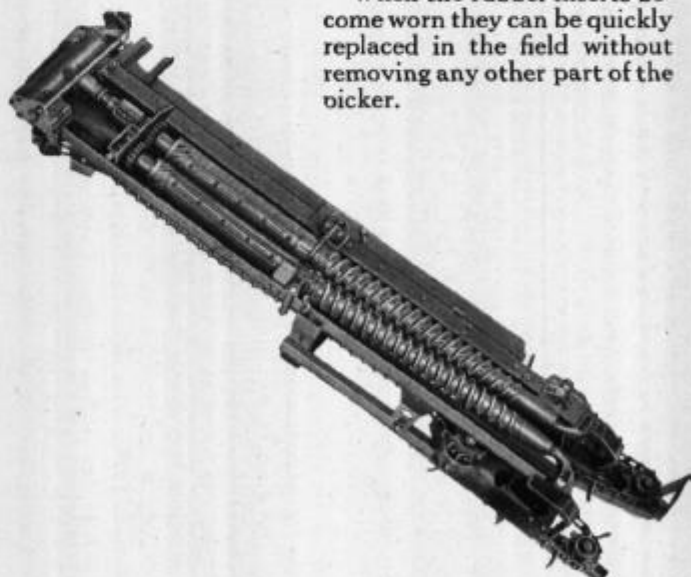
top of the rolls and are not drawn down between them. Thus shelling is reduced to a minimum.

Rubber snapping roll inserts are regularly provided to increase the aggressive action of the snapping rolls when picking in exceptionally tough or heavy corn.

Replaceable Rubber Husking Inserts

The husking sections of the continuous rolls are designed for rapid, efficient husking. Treaded, replaceable rubber husking inserts on each roll, timed to operate against the steel, grooved section of the opposite roll, quickly strip the ear of the husks remaining after it has passed the snapping section. The positive, non-slip action of rubber against steel protects the corn from bruising and minimizes shelling.

When the rubber inserts become worn they can be quickly replaced in the field without removing any other part of the picker.



Illust. 3 — Combination snapping-husking rolls. A compact transmission-drive operates both sections. Elevator chains keep the snapped ears moving steadily towards the trash rolls.

Straight-Through Picking Units

Straight-through picking, which is one of the chief advantages of the No. 24, results from the direct handling of the crop by combination rolls. These combination rolls have a gathering and snapping section at the lower end and a husking section at the upper end of the roll. Each picking unit has a set of two combination rolls, thus there are four continuous rolls in the No. 24 corn picker.

With straight-through picking, there is no obstruction to the movement of stalks and corn from the moment they enter the gathering unit until the stalks are expelled and the husked corn is delivered to the trailing wagon. The whole process is one continuous operation.

Passage of the ear over the rolls is assisted by the gathering and elevating chains which assure rapid, uninterrupted movement.

Direct handling of the corn speeds up picking to such a degree that the No. 24 can be operated at relatively higher field travel speeds even in high-yielding crops.

Aggressive Snapping Sections

The snapping sections are built to assure more rapid picking with a minimum of shelling. The stalk is seized by the aggressive spirals of the gatherer section. The ears are then quickly snapped off the stalk by the lugged, spiral snapping section of the rolls. The stalk is expelled as the ears pass on to the husking section. The conformation of the snapping rolls is such that the ears ride on





New and Modern Design . . . Outstanding Features

1. Steerable Divider: Makes it easy to open fields at any practical working angle. Pivots with tractor front wheel.

2. Outer Snapping Roll Adjustment: Permits easy adjusting of the snapping rolls to regulate the aggressiveness of the rolls.

3. Gathering-Snapping Rolls: The stalks of corn enter the wide gatherers of the corn picker and are seized by the spiral snapping rolls. The lower portion of the spiralled section assists in the gathering operation, while the upper (lugged) section does the snapping and begins the husking operation.

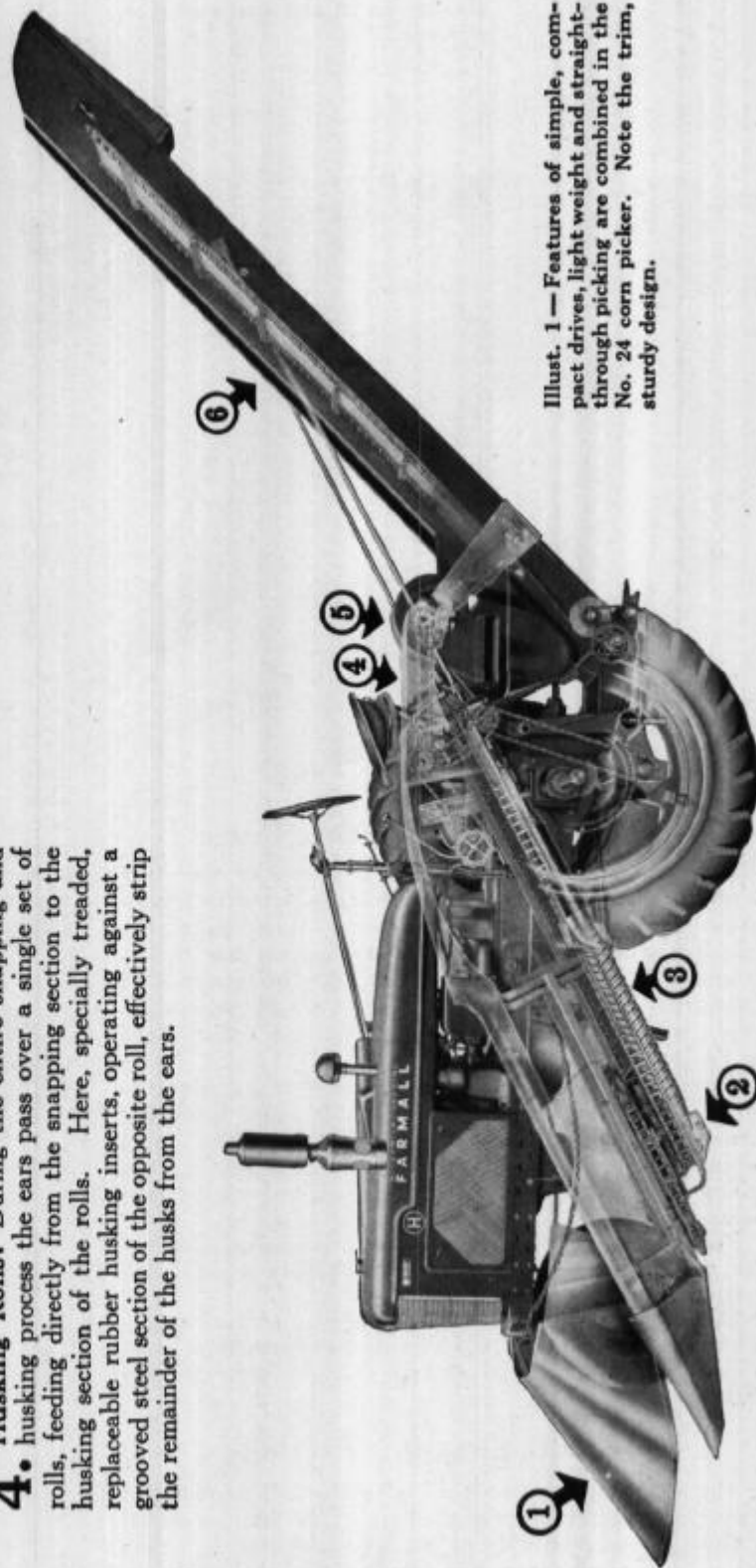
4. Husking Rolls: During the entire snapping and husking process the ears pass over a single set of rolls, feeding directly from the snapping section to the husking section of the rolls. Here, specially treaded, replaceable rubber husking inserts, operating against a grooved steel section of the opposite roll, effectively strip the remainder of the husks from the ears.

5. Trash Rolls and Fan: From the husking-snapping rolls, the ears pass upward and underneath a set of special trash rolls which expel any remaining stalks and trash. As the ears fall into the hopper, a blast from the dual-jet fan blows away the husks and silks.

6. Elevator: The wide, deep wagon elevator has ample capacity to handle the ears from the heaviest-producing crops.

Speed of Rolls: Easily varied to suit the crop conditions by reversing two double sprockets.

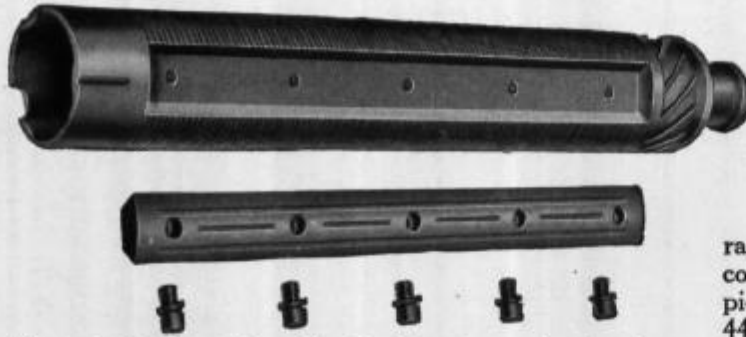
No. 24 Corn Picker



Illust. 1 — Features of simple, compact drives, light weight and straight-through picking are combined in the No. 24 corn picker. Note the trim, sturdy design.



No. 24 Corn Picker



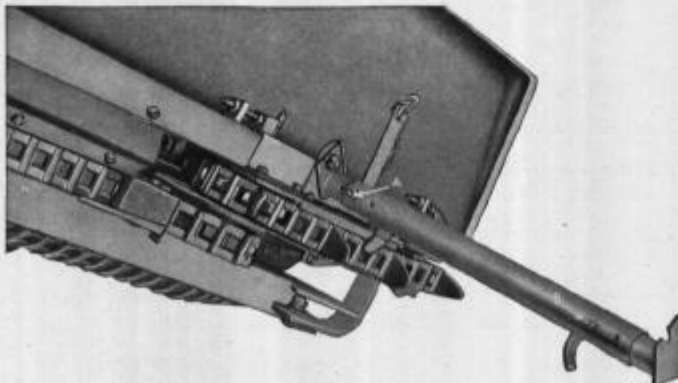
Illust. 1—Replaceable rubber husking insert showing how it is attached to the husking roll. Note that the insert is treaded and the steel section of the roll is grooved for cleaner picking.

Jackshaft Drive

A jackshaft drive, protected from overload by a safety clutch (see Illust. 3), actuates the picking units, elevator and fan. Power is furnished through a roller chain drive from the belt pulley sprocket. On either end of the jackshaft are two sprockets—one larger than the other—which can be reversed to vary the speed of the rolls in accordance with crop conditions. The elevator is driven from a gear located approximately in the middle of the jackshaft. A V-belt from the elevator to the fan drives the fan.

Steerable Divider

The No. 24 corn picker is regularly equipped with a steerable divider which is new in corn picker design. It is pivoted as the front wheels are turned, being mounted with special hub cap extensions on the front wheels. This feature permits complete flexibility of the divider. The No. 24 can enter a field at an angle without running over unpicked corn. A touch on the steering wheel to the right or left and the divider picks up down corn that might otherwise be run over.



Illust. 2—The telescoping lifting pipe connecting the picking units is the ready adjustment by means of which the snapping units can be set to pick rows varying in width from 36 to 42 in. on the Farmall H, and 36 to 44 in. on the Farmall M.

The steerable divider is automatically raised or lowered with the picking units. A chain and snap feature permits the operator to set the divider tip at any desired height from the ground.

Row Spacing Adjustment

The No. 24 corn picker works efficiently in a wide range of row widths. It can be adjusted to pick rows of corn ranging in width from 36 to 42 in. when the picker is mounted on the Farmall H, and from 36 to 44 in. when mounted on the Farmall M. The width adjustment is accomplished by moving the telescoping lifting pipe connecting the picking units either in or out. This feature permits an exceptionally wide range of planting and picking widths.

Wide Elevator

The wagon elevator is wide and deep to assure ample capacity in high-yielding corn crops. It is long enough to uniformly distribute the corn throughout the trailing wagon box.

When not in use, the elevator and hopper are detached as one unit. The brace rods are then used for supports and the self-contained jacks hold the unit in a position suitable for mounting.



Illust. 3—Elevator assembly in position for mounting on tractor. Note how the unit is held at the proper height for remounting without lifting. The brace rods and self-contained jacks also make this unit easy to store.

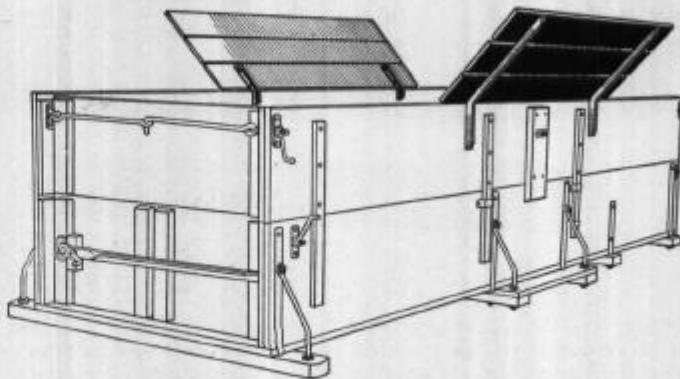


No. 24 Corn Picker

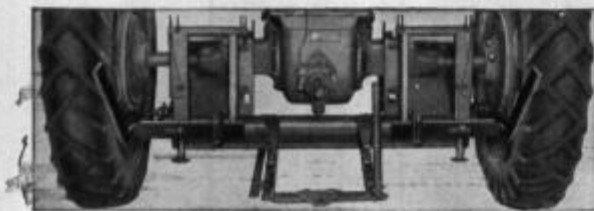
(Special Equipment)



Illust. 1—Wagon elevator top shield keeps the corn from falling from the elevator when the corn picker is operating at maximum speed over rough or uneven ground. Two wagon elevator top shields shown.



Illust. 3—Wagon extension side boards for wood wagon boxes. These extensions are sturdily built and flared to save the corn at ends of fields and on contoured rows.

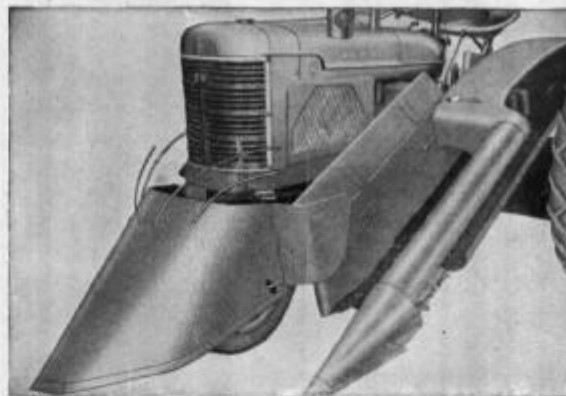


Illust. 2—The mud scrapers prevent the mud from building up on the inside of the rear tractor wheels, thus assuring more satisfactory operation.



Illust. 4—Hinged wagon tongue shown attached to picker draft bar. Parts are available for all Farmall pickers for making a hinged wagon tongue so that wagon can be trailed the proper distance behind tractor.

Illust. 5—(Right) Trash deflector assures smooth passage of stalks through snapping and husking units and prevents the ears of corn from falling from the units.



Specifications

Capacity: Two rows. Operating speed, $3\frac{1}{2}$ m.p.h. or up to 3 acres per hour.

Row widths: Accommodates row widths from 36 to 42 in. when mounted on Farmall H, and 36 to 44 in. on Farmall M.

Overall dimensions of mounted picker:

Width: $75\frac{1}{4}$ in. Easily transported through ordinary farm gates.

Height: 125 in. with elevator mounted.

Length: 264 in.

Shipping weight: 1995 lb.

Bearings: 60 ball and roller.

Number of roller chains: 8.

Gathering chains: Four (2 per snapping unit).

Type of divider: Free floating, steerable.

Tilting control: Hydraulic. Control permits easy raising and lowering of the picking units.

Type of snapping roll: Spiral. New design of snapping roll facilitates more rapid picking with less shelling. 35 in. long.

Wagon elevator: Depth, $6\frac{3}{4}$ in.; width, 14 in. Manual throwout clutch. Protected against breakage by safety clutch.

Cleaning fan: 6-blade, 1-piece. Assures trash-free corn.

Husking rolls: Number 4. Dimensions: $3\frac{3}{8}$ in. diameter, $23\frac{1}{16}$ in. length. Special replaceable rubber inserts remove the husks from the ear, minimizing shelling.

Safety clutches: Four. Located at husking, elevator and drive tension points.



INTERNATIONAL HARVESTER



No. 2-M Corn Picker

(Two-Row, Farmall-Mounted)



Illust. 1—No. 2-M, two-row corn picker mounted on Farmall-M tractor. This big-capacity two-row picker is especially suitable for large acreages and custom operation.

- Rugged construction for long life.
- Well-balanced for good traction and safety.
- Big capacity — picks up to 20 acres a day.

A Big-Capacity Corn Picker

The No. 2-M corn picker is a big-capacity, two-row corn picker built especially for Farmalls M, MD, F-20 and F-30. It is a heavy-duty, one-man machine that easily picks from 16 to 20 acres a day, thus making it an ideal machine for the large-scale farmer or custom operator. The No. 2-M is suitable for corn rows planted from 38 to 44 in. apart. It has all of the advantages of a self-propelled machine, opening a field anywhere without running down unpicked rows.

Height Adjustment

The angle or incline at which the snapping rolls are carried is important for maximum operating efficiency. Farmall corn pickers are provided with a patented height adjustment which permits maintaining the proper working angle of the rolls regardless of the tractor wheel dimensions or size of tire used.

Regular Equipment

Attaching parts for Farmalls M, MD, F-20 and F-30 (standard or narrow tread tractors), as specified. Rear delivery elevator. Steel frame with rear wagon hitch. Parts for hinging wagon tongue. Engine shield parts. Lifting jack. Radiator screen. Choice of steel husking rolls or alternate steel and rubber rolls, as specified.

Special Equipment

Tractor wheel shields. Trash roll attachment. Front bolster weights for F-20 or F-30. Rubberized husking rolls in lieu of regular at factory. Wagon box side extension boards.

Data

Width overall.....	8 ft. 9 in.
Length overall.....	26 ft. 9 in.
Height overall.....	9 ft. 11 in.

Specifications

Description	Net Weight (Approx.)
No. 2-M, 2-row mounted Farmall corn picker with rear delivery elevator.....	3514 lb.



No. 2-M Corn Picker



Illust. 1 — Front view of the No. 2-M two-row corn picker. Gathering units are adjustable to pick 38 to 44 in. rows.

Details — No. 2-M Corn Picker

Gatherers:

Extra-wide gatherer sheets with long, gradual slopes. Gatherer points hinged and free-floating. Two lower and one upper gatherer chains— heavy, malleable, pintle-type.

Center Divider:

Large, well proportioned, equipped with hinged point.

Snapping Units:

Standard for all sections. Equally efficient in tall, short, down, or squaw corn. Ample adjustments provided.

Snapping Rolls:

Fluted heads, spiraled corrugations and separate points. Upper bearings, roller with steel sleeve. Lower bearings, bronze— extend upward into roll, away from dirt.

Trash Beaters:

Regular equipment. Helps to keep trash and stalk ends out of first elevator.

First Elevators:

Ample capacity. Steel chain with flights carry the ears instead of dragging them along bottom.

Straight-Line Arrangements:

Snapping unit, first elevator, and husking unit arranged in a straight line.

Husking Units:

Adjustable ear forwarder. Four husking rolls to each unit. Shelled corn saver and cleaning fan.

Auger Delivery:

From ear corn hopper to wagon elevator.

Wagon Elevator:

Extends rearwardly. Driven from top. Can be readily removed as a unit for storage.

Elevator Throwout Clutch:

Controlled by lever convenient to operator. Prevents loss of ears when turning sharply at ends of field.

Wagon Hitch and One-Man Hitch Coupling:

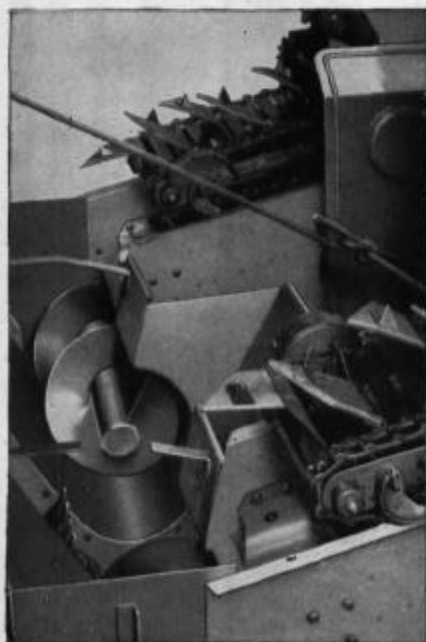
Parts supplied to make hinged wagon tongue so that wagon can be hitched close to tractor. Telescoping type. Enables one man to connect wagon and tractor quickly and easily.

Picker Readily Mounted:

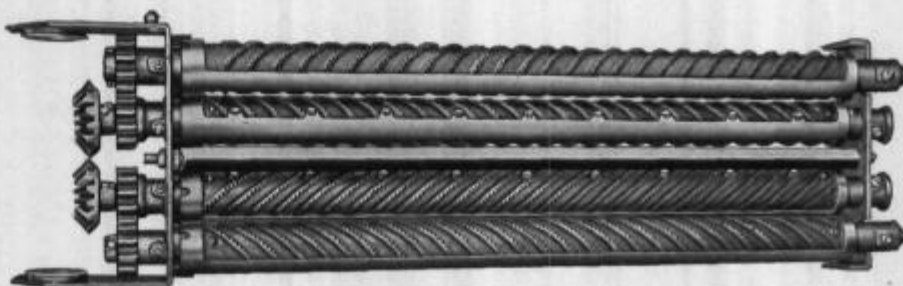
Quick-attachable features cut down time required for mounting and demounting.

Height Adjustment:

Makes it possible to maintain proper working angle of the snapping rolls, regardless of tractor wheel diameter or tire sizes.



Illust. 2 — This illustration shows the husking units and elevator hopper of the No. 2-M joined in mounted position.



Illust. 3 — Husking roll assembly of one unit of the No. 2-M corn picker.



No. 14-P Corn Picker

(One-Row, Pull-Type)

Simplified, Modern Design

- Combination snapping and husking rolls.
- Continuous, "straight-line" picking and husking.

Quickly Attached and Detached

- Tractor can be quickly released for other jobs.

Light Draft—Economical to Operate

- Picker can be operated by any two-pow tractor equipped with standardized power take-off.
- Picker weighs approximately 1500 lb.
- Pneumatic-tired wheels.

Big Capacity

- 10 to 12 acres a day.

Clean Husking

- Husking rolls with rubber inserts.
- Trash rolls and beater.
- Cleaning fan.

Illust. 1—The No. 14-P one-row, pull-type corn picker is designed for low-cost operation. It is shown here with regular equipment.



The No. 14-P is a one-row, pull-type corn picker of simplified, modern design. This lightweight, light-draft picker can be operated with any two-pow tractor (such as Farmall H, W-4 or their equivalent) equipped with standardized power-take-off. The No. 14-P offers the advantages of "straight-line" picking by means of continuous "in-line" combination snapping and husking rolls. From gathering points to rear-delivery elevator the flow of material is in a straight line through the machine. This speeds up the work and permits increased capacity. Every provision has been made to assure efficient performance in all types of corn and field operating conditions.

The picker is quickly attached to or detached from the tractor. This makes it an easy matter to use the tractor for hauling loaded wagons from the field or for doing other work in the course of the day. For example, the tractor may be used for picking corn in the forenoon and for combining soybeans in the afternoon, with little or no time lost in making the changeover.

Regular Equipment

Machine with sliding propeller shaft for use with tractors equipped with standardized power take-off, and less power-drive connection and tractor hitch—(see list of Power-Drive Connections and Tractor Hitches). Manual-type lift. Wheels with 5.50 x 16-in., 4-ply pneumatic tires. Combination snapping and husking rolls with replaceable rubber inserts on husking rolls. Beater. Trash rolls. Cleaning fan. Rear-delivery elevator with throw-out clutch and rope control.

Special Equipment

Hydraulic lift attaching parts (for use with Farmalls H, M or MD tractors equipped with Lift-All). Wagon elevator top shield attachment. Side extensions for wooden wagon box. Hinged wagon tongue parts. Snapping roll inserts—(set screws or steel-backed rubber type). Mud deflector attachment (for main wheels). High-speed cleaning fan sheave. Front wheel stop for Farmalls H, M and MD. Cornstalk lifter attachments for Farmalls H, M, MD, F-20, F-30 and 10/20, W-30, W-40, W-4 and W-6 tractors.

Power-Drive Connections and Tractor Hitches

(For tractors equipped with standardized power take-off)

- ZDA-1465 for tractors with 1 $\frac{3}{8}$ -in. splined take-off shaft.
- ZDA-1571 for tractors with 1 $\frac{1}{2}$ -in. splined take-off shaft.
- ZDA-1572 for tractors with 1 $\frac{3}{4}$ -in. splined take-off shaft.

Note: Special conversion packages can be obtained for converting tractors equipped with non-standardized power take-off to A.S.A.E. standards. Power-drive hitches as listed above, can then be used with such converted tractors.

Measurements and Weight

Overall length (with elevator).....	270 in.
Overall height (with elevator).....	125 $\frac{1}{2}$ in.
Overall width.....	82 $\frac{1}{2}$ in.
Approximate weight.....	1509 lb.



INTERNATIONAL HARVESTER



No. 14-P Corn Picker

(One-Row, Pull-Type)

Sturdily Built for Economical Service

Main Frame: The welded steel main frame provides a rigid base for holding the propeller shaft, snapping and husking unit, and wagon elevator unit all in true alignment.

Gatherer Unit: The wide, easy-sloping gatherers are designed for saving the maximum amount of corn in all conditions. The gatherer points are hinged and are equipped with snap chains for adjusting the vertical height. Two steel gatherer chains and two gatherer drive chains are provided. The left gatherer drive chain also serves as an elevating chain for carrying the ears rearward over the husking rolls to the wagon elevator hopper.

Snapping and Husking Unit: Two combination snapping and husking rolls are provided. These are similar in construction to the combination rolls on the No. 24 corn picker, as described on page 381. The continuous "in-line" arrangement of the snapping and husking rolls makes for a simpler design, eliminates wasteful "dead" areas and speeds up the operations. The snapping rolls can be conveniently adjusted from the side.

Beater and Trash Rolls: A revolving beater forces the snapped ears against the husking rolls so that husking is expedited and the trash quickly expelled between the rolls. Loose stalk ends and other material, which sometimes may be carried upward over the rolls, are seized by revolving trash rolls and expelled from the rear of the husking unit.

Cleaning Fan: The ears pass over the husking rolls and into the wagon elevator hopper. As they fall into the hopper a blast of air from the cleaning fan removes any remaining residue such as silks and light trash.

Rear-Delivery Elevator: The wagon elevator delivers the ear corn into a wagon trailed behind the picker. This elevator has ample capacity to handle the heaviest flow from the machine. A throw-out clutch, controlled by means of a rope from the tractor seat, is provided. The rearward location of the elevator eliminates side draft from the trailing wagon and permits easy handling of the entire outfit.

Main Drives: All main drives of the picker are equipped with roller chains. This assures positive drive, quiet operation and long life. Safety slip clutches, at all important working points, protect the machine against breakage. The cleaning fan is driven by a V-type rubber belt.

Enclosed Drive Gears: The main drive gears are fully enclosed and run in a bath of oil.

Approved Shielding: The propeller shaft and power-drive shaft are shielded in conformity to A.S.A.E. standards.

Manual or Hydraulic Lift: The picker is regularly equipped with a spring-balanced, manually-operated tilting lever for raising and lowering the gatherers and snapping unit. The position of the lever is adjustable to suit the operator.

Special hydraulic lift attaching parts can be supplied for the picker, enabling owners to utilize the hydraulic Lift-All feature of Farmall H, M or MD tractors for lifting the gatherers and snapping unit.



Illust. 1 — Snapping and husking roll unit showing the combination snapping and husking rolls, gatherer chains and compact transmission drive. The husking portions of the rolls have rubber inserts to assure a positive and aggressive husking action. The snapping rolls are drilled and tapped for inserting set screws or steel-backed rubber inserts, when a more aggressive snapping action is required in order to meet varied field conditions.

Data and Specifications

Tilting control (Regular).....	Manual
Tilting control (Special).....	Hydraulic (Lift-All)
Approximate weight of machine.....	1509 lb.
Height of machine (with elevator).....	125½ in.
Length of machine (with elevator).....	270 in.
Width of machine.....	82½ in.
Total number of ball and roller bearings.....	38
Number of roller chains.....	Four
Number of rubber belts.....	One
Gatherer points.....	Hinged
Gatherer chains.....	Two
Type.....	Steel
Speed.....	273 F.P.M.*
Clearance between chains and ground.....	0 in. to 16 in.
Distance between gatherer chains and snapping roll entry.....	16 in.
Snapping rolls.....	Two
Type.....	Spiraled with ribs and lugs
Length.....	35 in.
Speed.....	786 R.P.M.
Husking rolls.....	Two
Type.....	Steel, with ribbed rubber inserts
Diameter.....	3¾ in.
Length.....	23¾ in.
Speed.....	786 R.P.M.
Wagon elevator.....	
Depth.....	6¾ in.
Width.....	14 in.
Control.....	Throw-out Clutch
Speed of conveyor chain.....	267 F.P.M.*
Cleaning fan.....	6 blade, 1 piece
Speed.....	1175 R.P.M.
Tires.....	4-ply, 5.50 x 16 in.
Recommended operating speed.....	3½ M.P.H.

* Flights per minute.

Specifications are subject to change without notice.



INTERNATIONAL HARVESTER



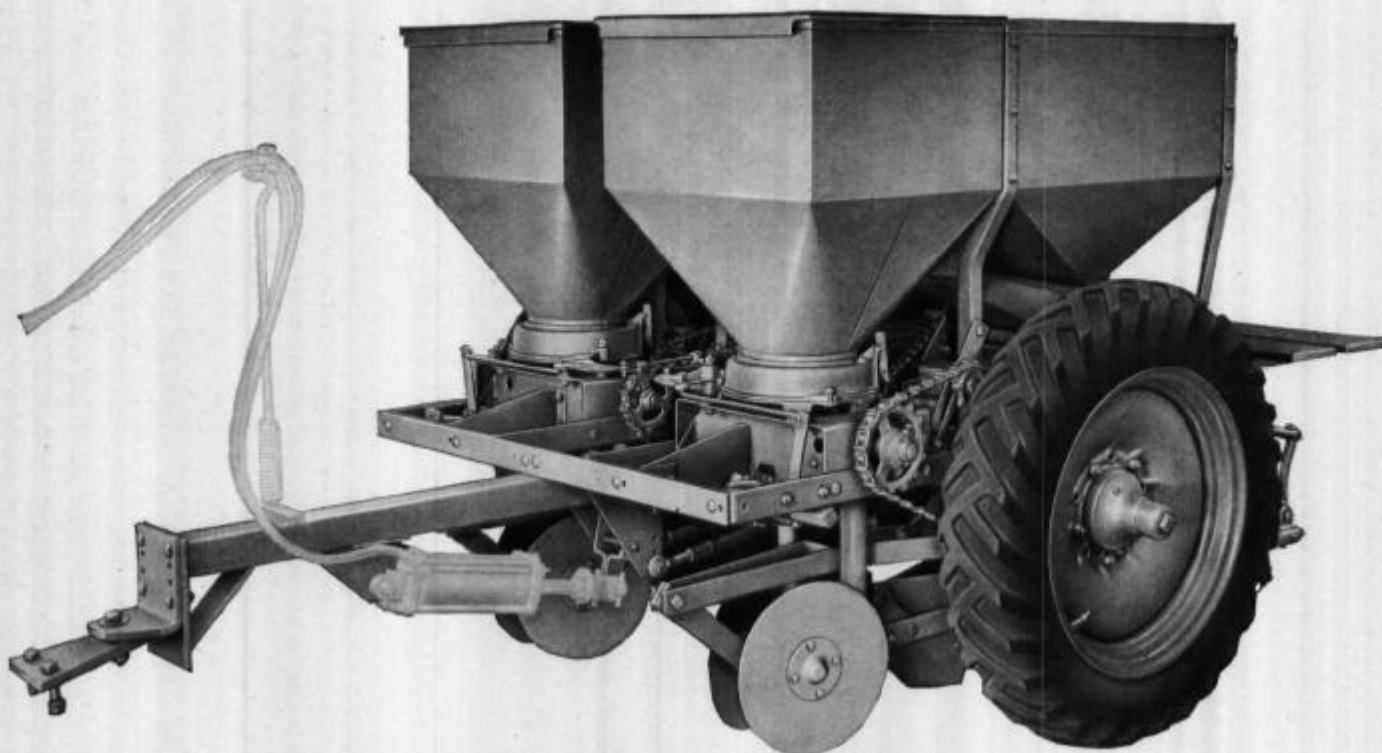
POTATO MACHINES

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No. 5 Two-Row Potato Planter



Illust. 1 — The No. 5 two-row, high-speed potato planter, equipped for operation by a hydraulic remote control system. As the planter is designed to be raised, lowered, and adjusted for depth by a standardized hydraulic remote control cylinder only, the purchaser must already have or must obtain a hydraulic remote control unit for his tractor.

A High-Speed Planter

The No. 5 two-row potato planter was designed for operation at speeds up to 5 miles per hour, depending on conditions. At any selected speed the No. 5 deposits the seed at equal intervals, at uniform depth, and in an undeviating straight line down the field. With equal accuracy it deposits, and immediately covers, a band of fertilizer on each side of the seed — either above, opposite, or below the seed level, as the operator chooses. With provision for numerous adjustments of seed spacing in the row and of the space between rows, the operator can set his machine to produce whatever plant "population" the moisture and fertility level of the field warrants.

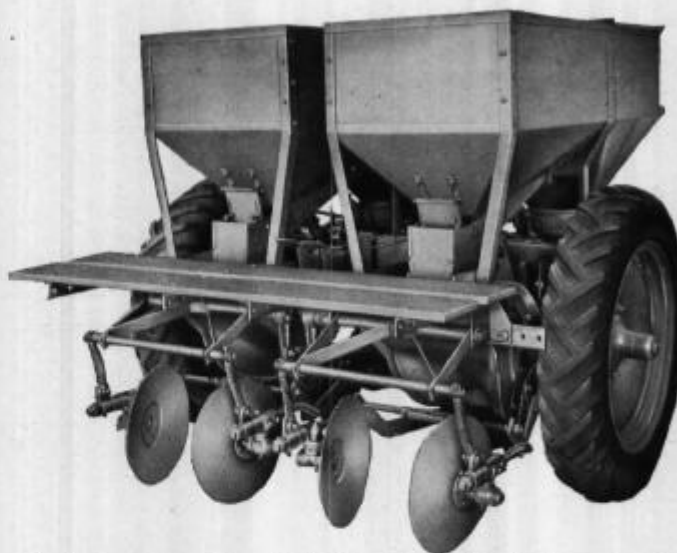
- Planter ground unit hydraulically controlled
- Planter height adjustable for flat and bed planting
- Accurate placement of seed and fertilizer
- Designed for high-speed operation
- Large capacity seed and fertilizer hoppers
- Accurate trailing — straight rows

Regular Equipment

7-50-24 pneumatic tires. Fertilizer unit. Rear platform. Adjustable hitch. Pedal-actuated out-of-gear throw-out mechanism.

Special Equipment

Removable seat. Disk type row markers



Illust. 2 — Rear view of the No. 5 potato planter, showing operator's full-width platform, seed hopper chutes with adjustable gates, and covering disks with five-way adjustment.

Specifications

Machine	No. Rows	Net Weight (Approx.)
No. 5 Potato Planter.....	2	*1887

* Does not include markers and seat.



No. 5 Two-Row Potato Planter

(Continued)

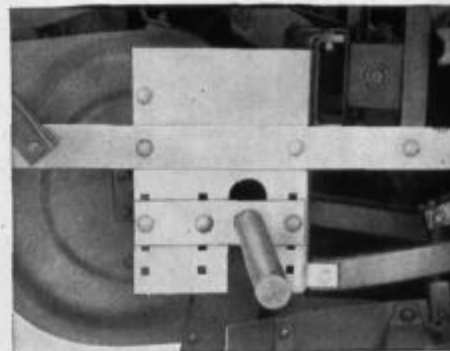
Height and Tread Adjustable

An outstanding feature of the No. 5 potato planter, and one experienced growers are quick to appreciate, is the provision for varying the height of the planter on the same set of wheels by means of adjustable stub axles. Planter height can readily be adjusted for either flat planting or bed planting (see illust.). Equally important, the stub axles are aligned to give the wheels the necessary camber and toe-in for straight-row trailing. Also, the hitch plate is adjustable for any planter height and any tractor drawbar height.

Another outstanding feature is the lateral adjustability of the planter frame to give row spacing of 32, 34, 36, 38, 40, and 42 inches. No additional frame members are necessary.

A supplementary adjustment of wheel tread is also possible. For example, when the planter frame is adjusted for row spacing of 34 inches the wheel tread is normally 68 inches. But the wheel tread may be ex-

Illust. 1 — Planter height can be conveniently increased or decreased 1½, 3, and 4½ inches by changing the position of the stub axle carriers (inner carrier not visible) in the manner shown. There is no need to change wheels.



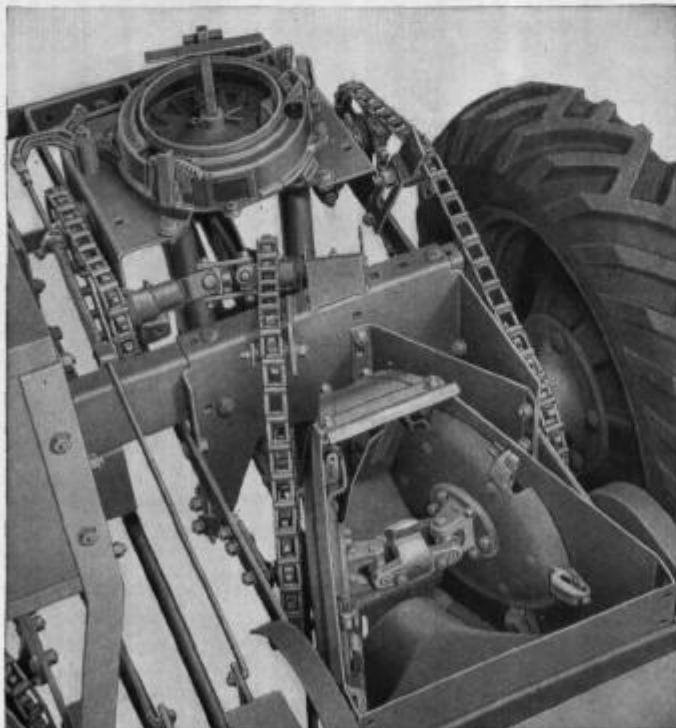
tended independently of the frame adjustment by adding fillers between the wheel disk and the flange of the wheel hub. A specially wide shoulder is provided on the wheel hub for that purpose.

The Planting Unit

In addition to the automotive type disk wheels and sturdy channel steel frame, the No. 5 potato planter incorporates in duplicate three basic units — the plant-

ing unit, the fertilizer unit, and the ground unit. Details of these units are given here in that order.

The main components of the planting units are the seed hopper, the feed chute, the seed chamber, and the picker wheels. The planting unit chain drive is from

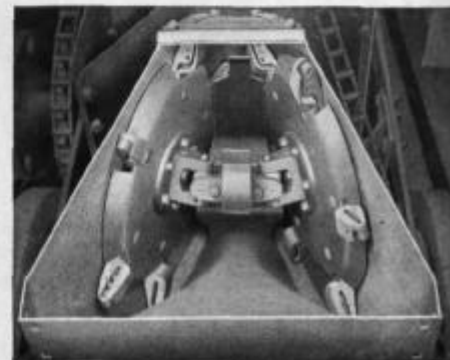


Illust. 2 — The drive to the picking and planting mechanism in the seed chamber is from the main wheel through the fertilizer shaft and stub shaft to the picker shaft. All principal bearings are equipped with fittings for pressure lubrication.

Illust. 3 — The feed chute is agitated constantly by two cams on the picker shaft (see illust. below). The quantity of seed admitted is regulated by the adjustable gate. The rate of flow and the level of seed in the seed chamber are controlled by the adjustable rubberized chute extensions.



Illust. 4 — This close-up view of the seed chamber and picker wheels shows one of the two chute-agitating cams on the picker shaft. Note how the arms of the picker wheels overlap to provide a single discharge point for the seed while picking it in separate areas.



No. 5 Two-Row Potato Planter

(Continued)

the main wheel through (1) the fertilizer unit shaft and (2) the stub shaft to (3) the picker wheel shaft, as shown in Illust. 2 on the preceding page.

Seed hopper capacity of this planter is extra large — $7\frac{1}{2}$ bushels — a time-saving feature, because fewer stops are necessary for replenishment. The seed is conducted from the hopper to the seed chamber via the feed chute shown in Illust. 3 on the preceding page.

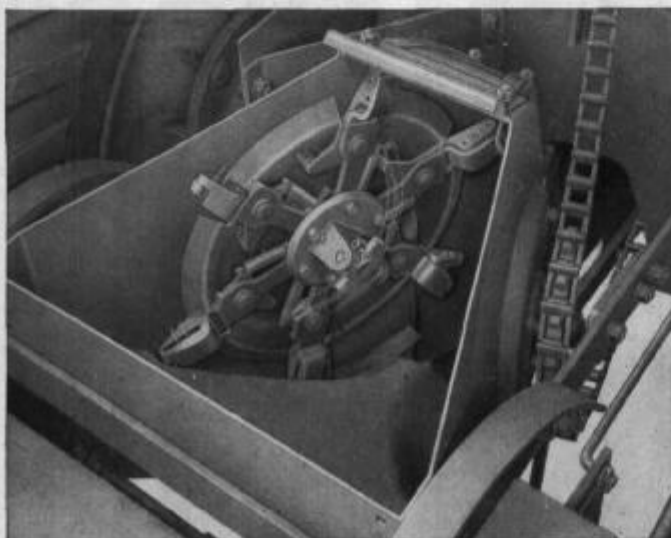


Illust. 1 — All four illustrations in this column show a left-hand picker wheel made up, for better visibility of parts, with a transparent plastic disk in place of the regular metal disk. The above is an outside view.



Illust. 2 — This inside view of the same left-hand picker wheel shows the mechanism by means of which the seed is firmly impaled on the picks and carried around and released at the discharge point.

Illust. 3 and 4 — Below, the transparent plastic picker wheel is in place in the seed chamber with the cam followers of three arms on the cam (outlined) and the jaws open — in the same position as they are shown in the illustration at right. As each cam follower engages the cam, the jaw opens, the picks are withdrawn, and the seed drops into the furrow. As each cam follower leaves the cam, the coil spring snaps the jaw shut, impaling another seed piece on the picks.



The Feed Chute

The feed chute is free to float and is constantly agitated by two cams on the rotating knuckle joint connecting the two picker wheels (Illust. 4 on preceding page). The cams, striking an extension plate on the bottom of the chute, keep the chute in motion and assure a steady movement of seed to the seed chamber.

The flow of seed to the seed chamber is regulated by means of (1) a gate near the outlet end of the chute and (2) two adjustable rubberized extensions attached to the chute outlet. The gate, held in position under spring pressure, is movable up and down to admit more or less seed as desired.

The adjustable rubberized extensions, one on each side of the chute outlet, further regulate the flow of seed and, in conjunction with the gate, automatically maintain the proper level of seed in the chamber. The level of seed in the chamber is determined by the height to which the rubberized extensions are adjusted by the operator. The action is as follows:

1. Seed proceeds in an unbroken stream from the hopper through the agitated chute and, after passing the adjustable gate, rests columnwise on the body of seed in the seed chamber.

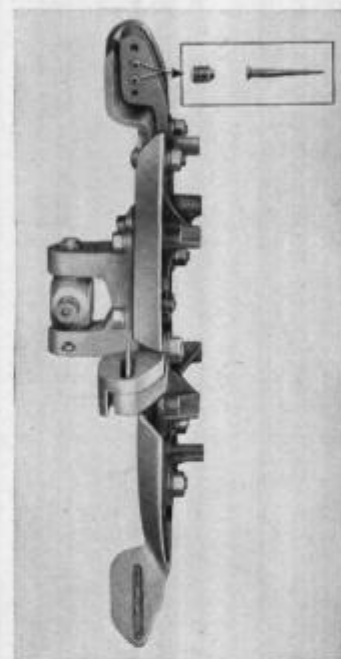
2. The seed has no opportunity to spread out in the chamber until after it has passed the adjustable rubberized extensions. Consequently the height at which the extensions are set determines the level of the seed in the chamber.

3. As seed is picked and removed from the chamber by the picker wheels, the column of seed in the chute continuously moves down and spreads out to replace the picked seed.

4. At the same time, the column of seed in the chute is continuously replenished by fresh seed moving past the adjustable gate as the result of agitation by the cams on the picker shaft.

Seed Chamber and Picker Wheels

The most notable feature of the seed chamber and planting mechanism is the angled position of the 6-arm picker wheels. This unusual V-shape arrangement, with the six arms of one wheel dovetailing with the six arms



Illust. 5 — An edgewise view of a picker wheel, showing the four holes in which the picks may be set to suit the size and shape of the seed. Inset is a close-up of a pick and its retaining plug.



No. 5 Two-Row Potato Planter

(Continued)

of the other, has three noteworthy advantages, as follows:

First, with twelve picker arms to pick and drop the seed, planting can be carried on at high speed (up to 5 miles per hour) without loss of accuracy. Planting at 5 miles per hour, with standard 11-inch spacing, each picker wheel revolves at the low rate of 20 r.p.m.

Second, with the twelve picker arms staggered and overlapping, the seed pieces are dropped directly in the center of the furrow without having to be deflected.

Third, the picking troughs or areas in the seed chamber are widely separated. Consequently there can be no bridging or other interference during this important operation. Picking is virtually one hundred percent accurate.

The pick and release mechanism of the picker wheels is pictured and described in nearby illustrations and captions. Spacing of seed in the row is varied by chang-

ing the seed spacing sprockets (Illust. 2, Page 391), one on the fertilizer shaft (inside end), the other on the picker shaft (inside end). Dealers' orders should state the spacing or sprocket sizes wanted. In the absence of such information planters are shipped with two 11-inch sprockets, giving standard spacing of 11 inches. Sprockets are available to provide the following spacing: 7, 8, 9, 11, 13, 15, 17, and 20 inches.

The picker points or picks on this planter are of the pin, not the staple, type (Illust. 5, Page 392). They can be placed in any two, or any three, holes of the four provided in each arm, thus assuring accurate picking of any size and shape of seed at any speed. Owing to the "V" shape of the picker wheel troughs, no lateral adjustment of points is necessary. Points can be replaced in a few moments.

The Fertilizer Unit

The principal components of the fertilizer unit of the No. 5 planter are the hopper and the mechanism for metering the fertilizer and laying it in bands alongside (but not touching) the seed. The chain drive to the fertilizer unit (Illust. 2) is from the large sprocket on the main wheel to the smaller sprocket on the fertilizer shaft, then through the main clutch (jaw type) and a set of bevel gears.

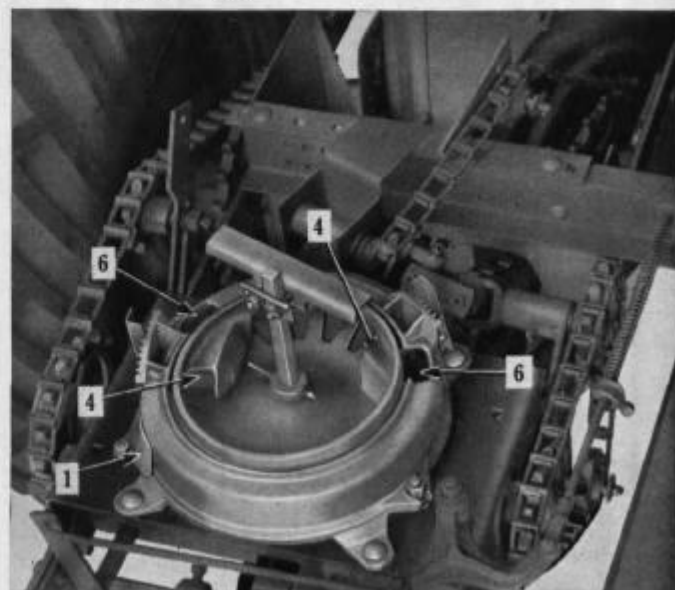
The fertilizer hopper, in keeping with the seed hopper, is of extra large capacity. It holds 350 pounds of fertilizer. It is sturdily constructed and has a tight-fitting waterproof lid. Secured to the seed hopper by only four bolts, it is easily removed for cleaning.

The fertilizer metering and discharging mechanism is the star wheel type so successfully used in other IH fertilizer distribution units. The star wheel, which in effect is a rotating bottom for the fertilizer hopper, turns in a clockwise direction, carrying the fertilizer past adjustable gates to openings above the rubberized discharge tubes which direct it to the bottom of the furrows made by the fertilizer furrow openers. The flow of fertilizer is maintained not only by the rotary movement of the star wheel but also by the movement of the adjustable bar type agitator clamped to the square star wheel shaft above the star wheel.

The amount of fertilizer admitted to the discharge tubes is controlled by two gates whose position is set by means of two levers on the outside of the unit. With free-running fertilizer, close regulation of the flow can be attained. The range of adjustment, with the star wheel regularly supplied, is from 1,500 pounds per acre to 3,000 pounds per acre.

Sight holes just above the discharge tubes permit the operator to observe the rate of flow and to note interruptions from any cause. Fertilizer cakes easily, so clean-out access openings under detachable covers have been provided just in front of the gates. Small obstructions can be dislodged and removed through these openings. If it becomes necessary to remove and clean the

Illust. 1 and 2 — The illustration below shows the fertilizer unit as it appears with the hopper removed. Note location of clean-out hole and cover (1) on one side, also the two feed gates (4). The illustration at right is a close-up of the star wheel (2) and the agitator (3), also the two feed gates (4). Visible under the star wheel are the two openings (5) to the discharge tubes. Note in both illustrations the two sight holes (6) through which the operator can watch the rate and continuity of flow.



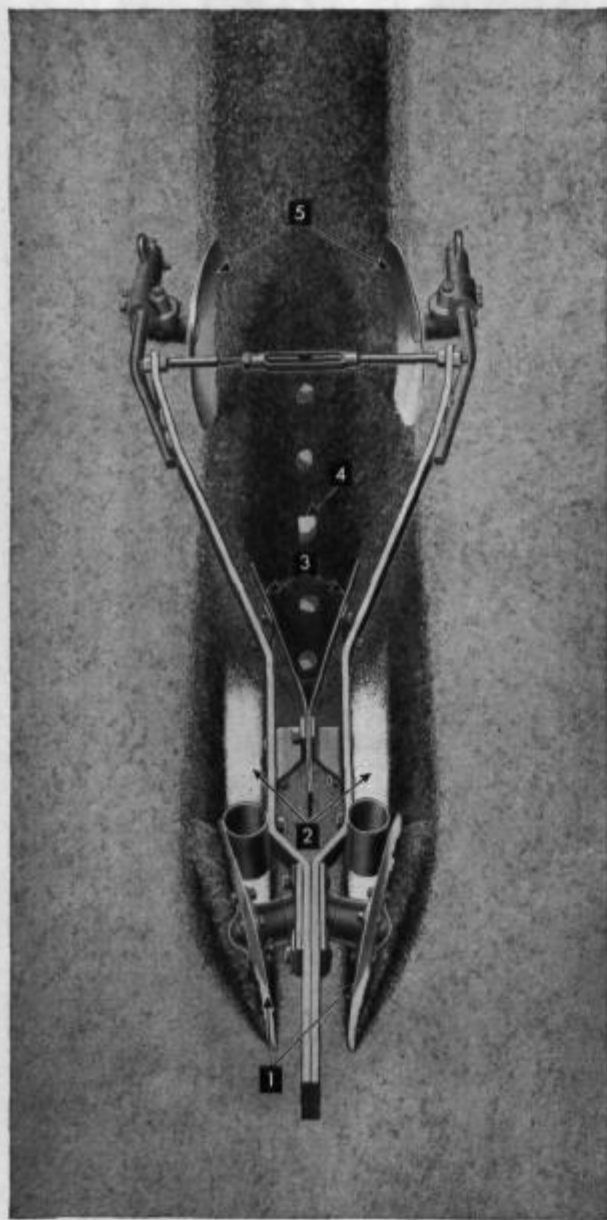
fertilizer unit, that can be done with relative ease. In order to disassemble the upper portion of the feed mechanism to the point shown in Illust. 1, it is necessary only to remove the hopper and loosen two bolts in slotted holes.



No. 5 Two-Row Potato Planter

(Continued)

The Ground Unit



Illust. 1—This illustration shows, first, the mechanical construction of the ground unit and, second, how the furrows are opened for the seed and fertilizer and how the seed and fertilizer, when deposited in their respective furrows, are covered. The ground unit is raised and lowered and adjusted for planting depth by means of the hydraulic remote control system. The planting and fertilizer units of the planter are automatically taken out of gear when the ground unit is raised, and vice versa. (1) indicates the fertilizer furrow opener disks, (2) the fertilizer deposited in the furrow, (3) the seed furrow opener, which also covers the fertilizer, (4) the seed deposited in the furrow, (5) the covering disks. For adjustments controlling the position of the fertilizer furrow openers and the covering disks, see nearby illustrations and the accompanying text.

By the ground unit we mean the ground-working section of the planter, that subassembly of parts which opens furrows to receive the seed and fertilizer and, after these have been deposited, covers them to whatever depth the operator wishes. The ground unit (see illust.) consists of a heavy frame to which are attached the two disk type fertilizer furrow openers, the two fertilizer tube guides, the runner type seed furrow opener, and the two concave covering disks.

In operation the ground unit is raised, lowered, and adjusted for depth by means of a hydraulic remote control system. The movement of the piston in the hydraulic remote control cylinder attached to the rockshaft plates on the planter can be regulated manually (by means of a stop ring on the piston rod) to lower the ground unit to the desired planting depth. From this position the ground unit can easily be adjusted upward as necessary (when planting in soft ground, for example) by means of the control rod on the tractor. Supplementary adjustment of the fertilizer furrow openers and covering disks is discussed farther on.

As the ground unit is raised, an arm on each side of the rockshaft engages another arm which in turn disengages the jaw clutch under each fertilizer unit, throwing the entire seed and fertilizer feed mechanism out of gear. As the ground unit is lowered, the process is reversed. A pin inserted through the rockshaft plates and under the drawbar when the ground unit is in the raised position (and planter out of gear) locks the planter in this position and permits easy removal of the hydraulic remote cylinder for use on other equipment.

Fertilizer Furrow Opener Disks

These furrow openers are straight disks set at the angle necessary to make the proper width of trench for the fertilizer, which reaches the trench in a steady stream through the tubes immediately behind the disks. The furrow openers turn on large plain tapered bearings. Depending on whether the fertilizer is to be deposited below, opposite, or above the level of the seed, the furrow openers are adjusted individually in one of the three positions shown in Illust. 1, page 392-C. The band on one side of the seed can be placed deep and the band on the other side high, if desired. With a furrow opener removed, adjustment involves removal of only two bolts and shifting of the holding plate up or down.

Seed Furrow Opener

The V-shape, runner type seed furrow opener has two functions: (1) to make a trench for the seed at whatever depth the operator desires, and (2) to cover the band of fertilizer as it is deposited at each side of



No. 5 Two-Row Potato Planter

(Continued)

the seed. As previously stated, the depth of the seed furrow or trench is governed by the adjustment of piston travel in the hydraulic remote control cylinder on the planter.

The seed furrow opener is cut away somewhat at the rear to permit some dirt to fall back into the trench and keep the seed from rolling out of line when dropped. The ground unit raise-and-lower linkage from the rockshaft attaches to the ground unit at the forward end of the seed furrow opener. The linkage incorporates a cushioning spring for absorption of ground shocks.

Covering Disks

These concave covering disks gather up loose soil on each side of the row and ridge it up over the fertilizer and seed to whatever width and depth the operator considers desirable. The bearing on which the disks turn is made large and strong in order to maintain alignment and give long wear. Coil springs on the pressure rods permit the disks to override solid obstructions without damage.

Two closely related factors govern the adjustment of the covering disks: (1) the width, depth, and contour of seed coverage desired, and (2) the level of ground the grower wishes to leave between rows. Growers' preferences in these respects vary widely from one locality to the next and from one region to another, as different conditions necessitate different planting practices.

On the No. 5 planter the (1) width, depth, and contour of coverage and (2) level of ground between rows can be varied by changing one or more of the

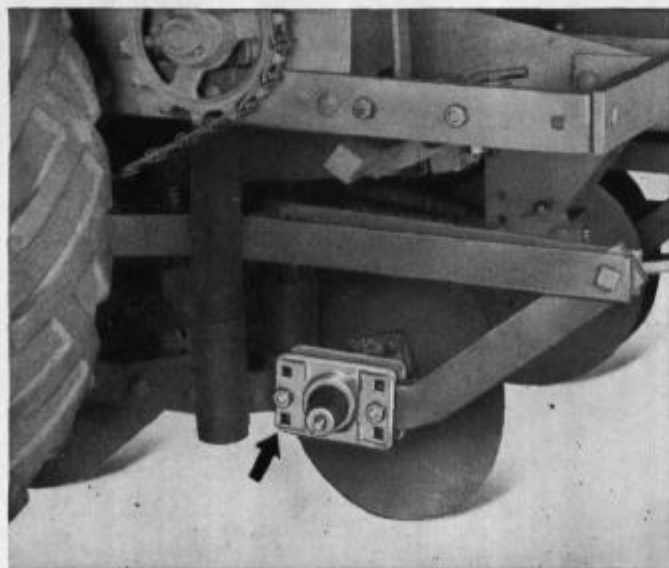
following: (1) the attaching point of the two control rods on the rockshaft plates to which the hydraulic remote control cylinder is connected, (2) the length of the control rods, (3) the width of the ground unit frame at the rear end where the covering disks are attached, (4) the horizontal angle of the disks, and (5) the vertical angle of the disks. These changes affect the volume and placement of soil handled as follows:

1. The point on the rockshaft plates at which the covering disk control rods are attached determines the depth at which the covering disks will run when the hydraulic remote control lowers the ground unit to operating position. The control rods can be bolted in any one of three holes. For deepest penetration they are bolted in the lowest hole. (Incidentally, this adjustment determines the ground clearance when the disks are in the raised or "transport" position.)

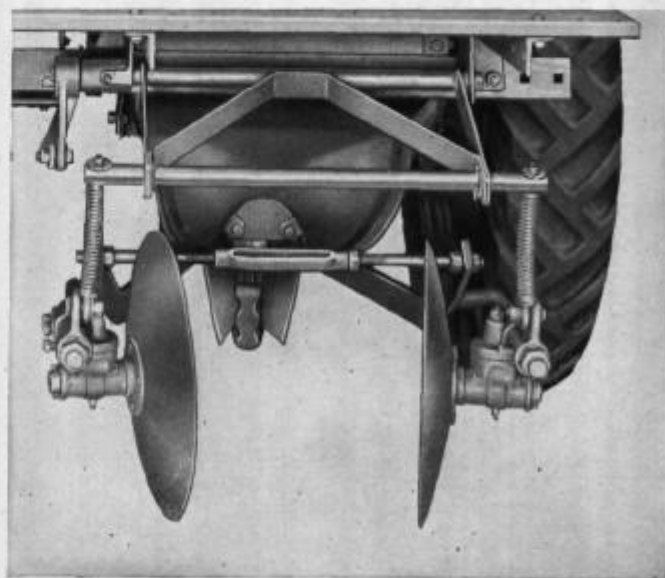
2. Further regulation of cutting depth is obtained by lengthening or shortening the control rods by means of the threaded rod and sleeve adjustment provided. Major adjustments of cutting depth are made by attaching the control rods at different points on the rockshaft plates, minor adjustments by screwing the rods in or out of the threaded sleeves.

3. The width of the ground unit frame at the rear end can be changed a limited amount by means of the turnbuckle on the two rods connecting the frame (see illust. below). This is a basic adjustment in establishing the width of coverage and, once made to the owner's satisfaction, is seldom altered.

4. The horizontal angle of the disks can be changed



Illust. 1 — One fertilizer furrow opener disk has been removed to show the provision for depth adjustment. These openers are adjustable individually for depth in three positions as indicated, permitting deep placement on one side of the seed and high on the other side if desired.



Illust. 2 — The covering disks pull the soil over the seed to give just the right width, depth, and contour of coverage. In all, five adjustments control the action of the covering disks. These adjustments are described in the accompanying text.



No. 5 Two-Row Potato Planter

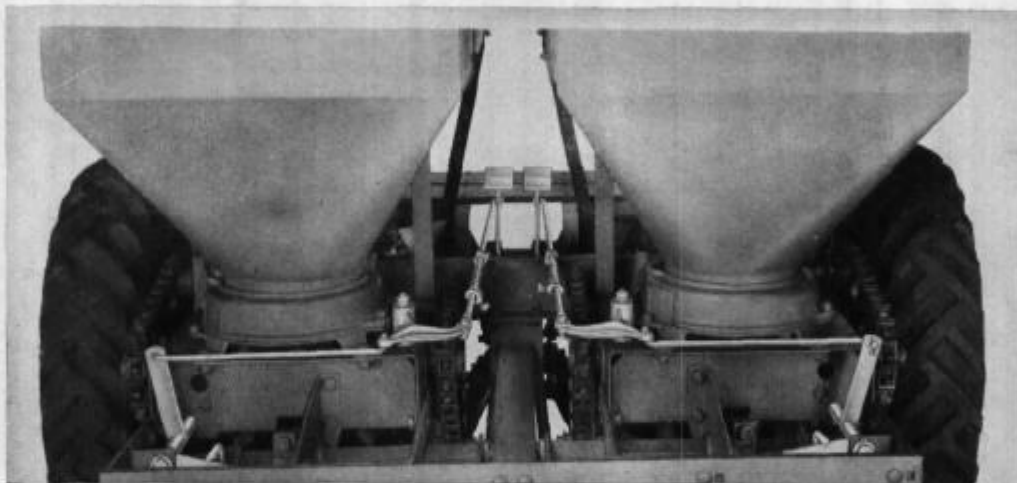
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by loosening the bolt holding the rosette above the disk axle sleeve and turning the disk to right or left. The purpose of this adjustment is to throw up more dirt or less dirt, as desired.

5. The vertical angle of the disks can be changed by (a) loosening the nut on the end of the disk support rod, (b) loosening the setscrew holding the rosette sleeve on the support rod, (c) loosening the two setscrews holding the tapered sleeve on the support rod, and (d) rotating the tapered sleeve on the support rod until the desired disk angle is obtained. The purpose of this adjustment is to narrow or widen the coverage and raise or lower the contour of the ridge.

NOTE: All five of the covering disk adjustments just described are made for the general purpose of controlling the width, depth, and contour of coverage in a great variety of soil and climatic conditions and in conformity with widely different planting practices. The interrelationship is such that no single adjustment is made without due consideration of the others, a fact which applies particularly to adjustment of the disk angle (1) horizontally and (2) vertically. With the five adjustments available, operators are able to obtain precisely the width, depth, and contour of coverage they want while leaving the ground between rows at the desired level.

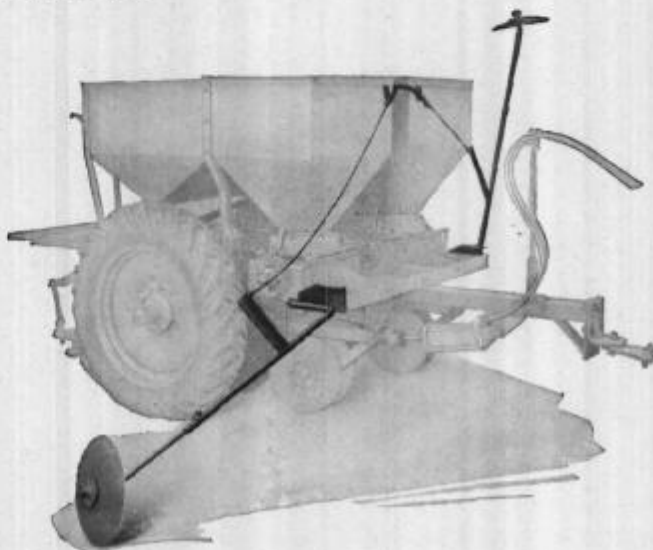
Illust. 1 — A pedal-operated out-of-gear throw-out mechanism, to be used by the operator on the rear platform, is regular equipment. With this device the planter operator can throw the planting and fertilizer mechanism out of gear on one or both sides and stop the flow of fertilizer and seed as the planter reaches the end of a row. Then, in the brief interval before the ground unit is hydraulically raised to the transport position by the tractor operator, the covering disks can cover the seed clear to the end of the row. In the illustration, the linkage from the pedals to the jaw clutch under each fertilizer unit is high-lighted.



Special Equipment



Illust. 2 — A convenient implement type seat, which attaches to the platform supports, is available as special equipment. The seat standard rests securely in a socket. This feature permits lifting the seat out of the way of trucks backing up to load seed and fertilizer into the hoppers.



Illust. 3 — Disk type, cable-operated markers are available on special order. These markers are raised and lowered by the operator on the rear platform of the planter.



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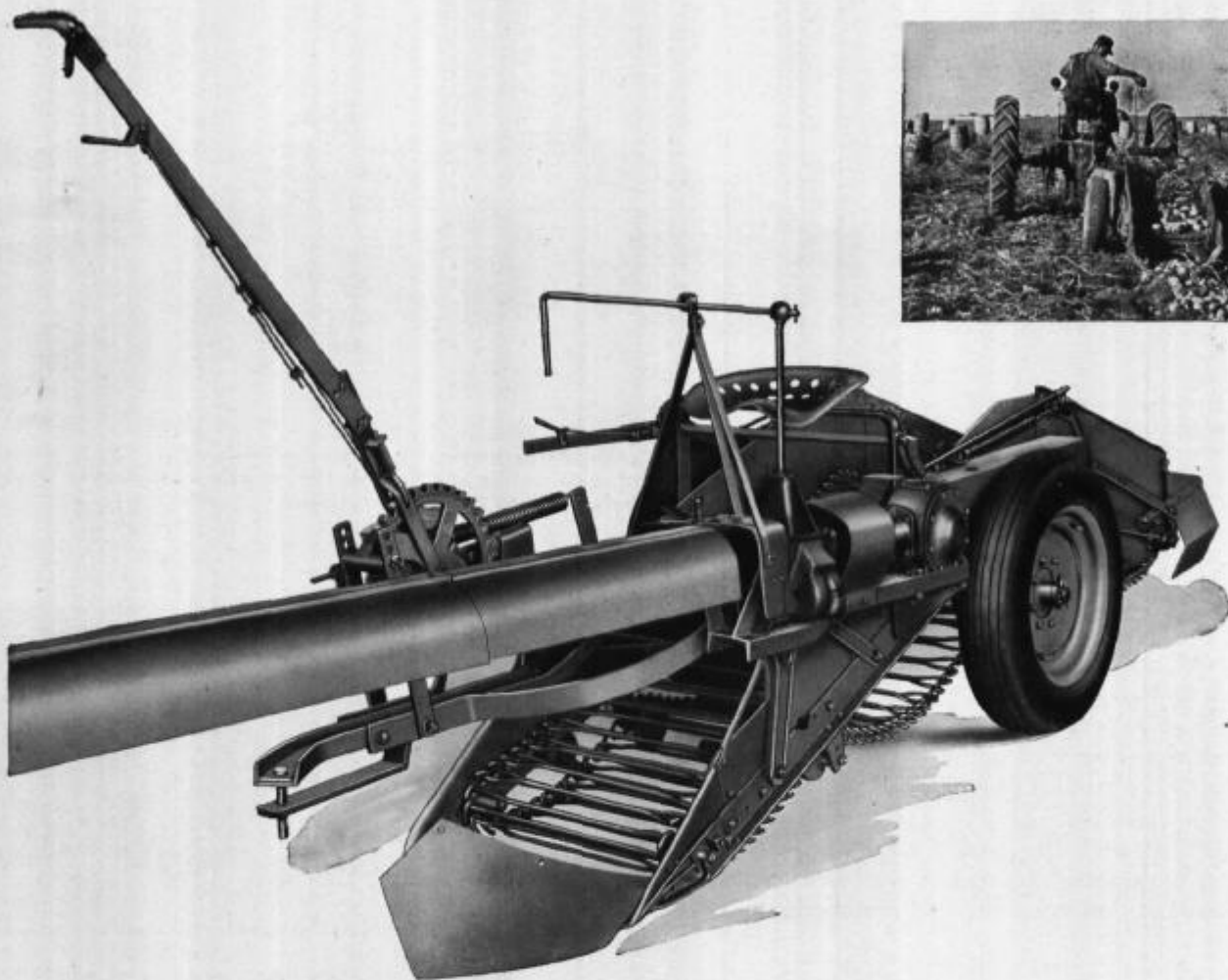
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Nos. 16 and 17 Potato Diggers

(One-Row Power-Drive)



Illust. 1—The No. 16 one-row power-drive potato digger, shown with 3-speed over-drive transmission, has a 26-in. elevator. The No. 17 digger has a 24-in. elevator.

A digger which will handle potatoes with a minimum of bruising and at the same time obtain satisfactory separation at the rear of the apron must have a wide range of adjustment to adapt it to seasonal variations in soil moisture, types of soil, and variety of crop harvested.

Nos. 16 and 17 one-row power-drive diggers come with adjustable elevator which the operator can raise or lower by means of seven convenient settings on the wheel axles. The elevator is of continuous type with drive sprockets at the rear and rollers on the central shaft. This construction assures a tight apron without sag throughout its entire working surface. The rear end of the digger is raised and lowered by a separate hand lever. It is therefore fully adjustable to the ground regardless of the height of the elevator or the depth at which the shovel is working.

- Fully adjustable for high or low bed.
- Continuous elevator with rear drive.
... extension elevator if required.
- Wide range of elevator speeds.

Specifications

No. Machine	No Rows	Width Elevator, Inches	Net Weight* (Approx.)
16	1	26	1305 lb.
17	1	24	1257 lb.

*Equipped with continuous elevator, sheet deflectors, wheels for 6.00 x 16 tires less tires and tubes, less power drive and hitch parts and less 3-speed transmission.



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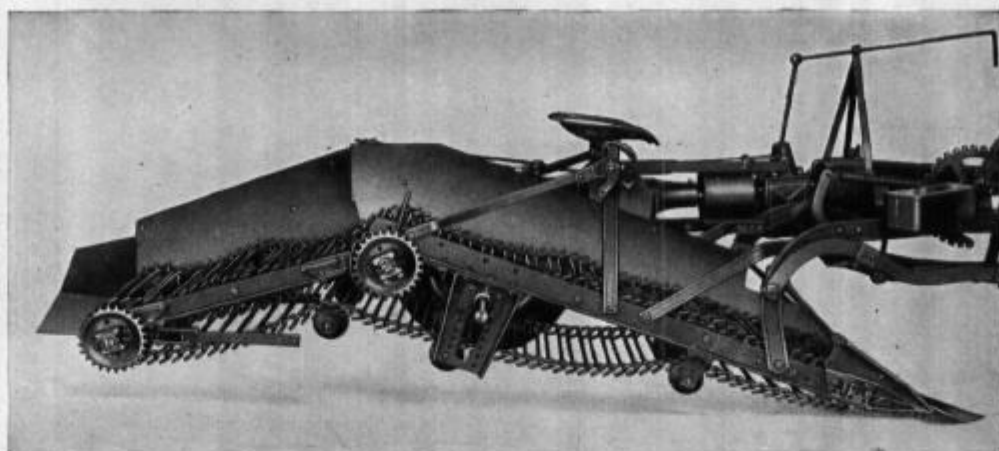


Nos. 16 and 17 Potato Diggers

(Continued)



Illust. 1 — Vine hooks, available as special equipment, separate and straighten vines to prevent their clogging in the throat of the digger.



Illust. 2 — Digger with side plates removed to show adjustable apron. By lowering the elevator to its minimum setting of 21 inches the machine becomes a level-bed digger for easy separation and minimum bruising.

Wide Range of Control

To meet varying soil conditions the machines are provided with an unusually wide range of control over the potatoes as they travel over the aprons. Drive sprockets can be had in four different sizes. Interchangeable rollers and three sizes of agitator sprockets are furnished to regulate the amount of agitation.

The automotive-type, 3-speed transmission, supplied when ordered, makes it possible to run the elevator at the lowest possible speed consistent with efficient separation. The hazard of bruising is reduced to a minimum.

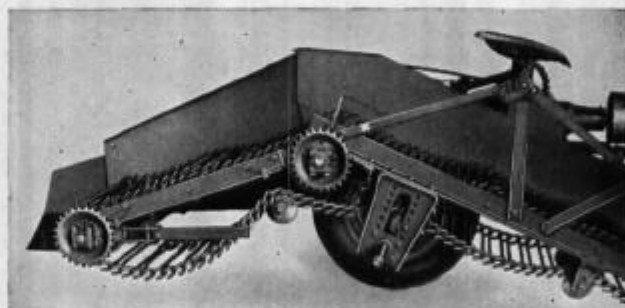
Regular Equipment

Continuous apron elevator. Wheels for 6.00-16 pneumatic tires (tires not included) or 30-in. steel wheels, as ordered. Straight axles for standard rows, or bent axles for use on narrow rows, as ordered. Sheet deflectors. Types A, B, C or M shovels. Apron roller and agitator sprockets—roller and any two sprockets supplied as ordered. Drive chain sprockets—one of three sizes supplied as ordered (smallest size for maximum speed).

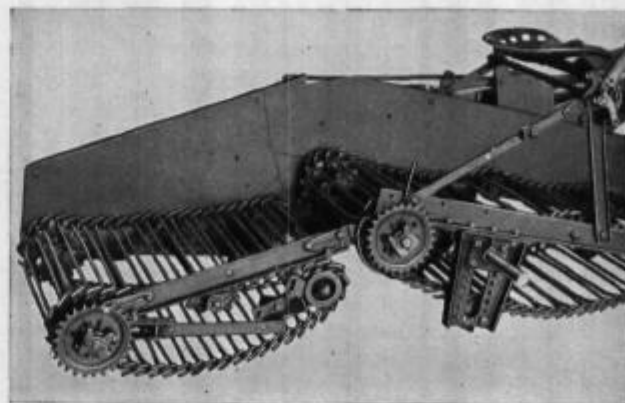
Special Equipment

Extension-type elevator. Wheels with 6.00-16-in., 4 or 6-ply tires. Skid ring lugs (set of 24); and extension rims for steel wheels. Long axle. Power drives and tractor hitches for various tractors. Roller-type foretruck for tractor drawbar for F-12 and F-14, or for F-20 and F-30. Rod-type deflectors. Stone trap. Flanged rollers. Stone deflectors. Vine hooks. Large seat. Three-speed transmission.

See also pages on Attachments.



Illust. 3 — When the elevator is raised to its maximum height of 31 inches, the digger becomes a standard high-bed machine to meet conditions of hard separation.



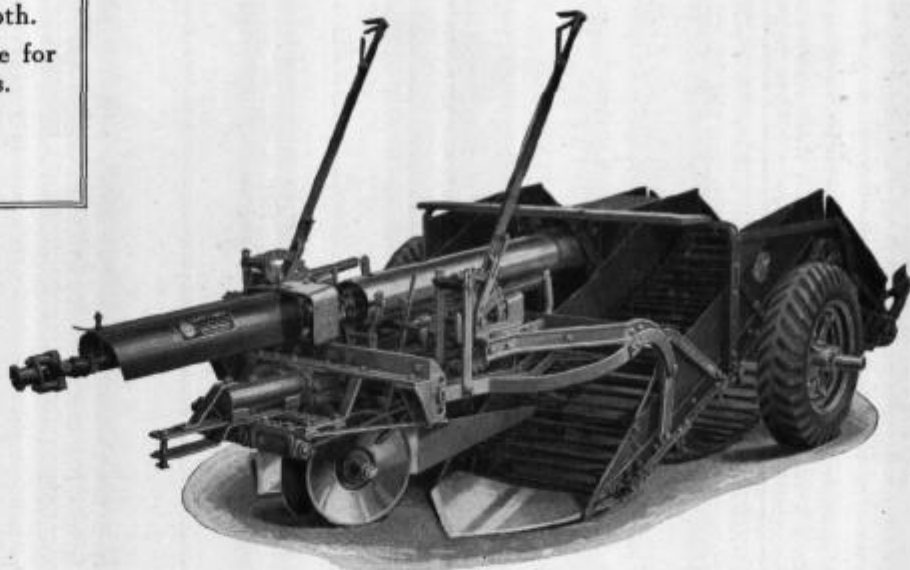
Illust. 4 — The digger can also be equipped for operation with divided, extension-type elevator if more aggressive separation is needed. Adjustment at the forward end of the extension section permits the operator to regulate the height of drop.



No. 12 Two-Row Power-Drive Potato Digger

- Heavy-duty for digging at full depth.
- Elevators pivoted forward on axle for easy depth regulation of shovels.
- Straight line of power.
- Wide range of elevator speeds.

Illust. 1—No. 12 two-row potato digger shown with wheels for 7.50 x 18 pneumatic tires. It has 24-inch elevators and will dig in row spacings from 32 to 42 inches.



The No. 12 two-row digger is a powerful machine that can be operated at full depth to avoid cutting the potatoes in uneven ground and will carry ample quantities of soil on the elevators to protect the potatoes against bruising.

The flow of power from the power take-off is on almost a direct line to an enclosed gear box on the digger, thereby reducing to a minimum any strain on connecting parts. From the gear box a heavy roller chain is connected direct to the shafts that drive the elevators.

There is a separate shaft for each elevator. The shafts are mounted on self-aligning bearings and are joined by a universal connection. There is no binding in the shafts and no binding between the digger units—yet the construction is the simplest ever designed for a two-row digger. A safety release clutch, mounted on the power drive shaft, prevents damage to the driving mechanism should either of the elevators clog for any reason.

To meet varying soil conditions the operator of this digger is provided with an unusually wide range of control over the potatoes as they travel over the aprons. Drive sprockets can be had in four different sizes, an intermediate size being regularly supplied. Interchangeable rollers and three sizes of agitator sprockets are furnished with each digger to regulate the amount of agitation.

The automotive-type 3-speed transmission, available on special order, makes it possible to run the elevator at the lowest possible speed consistent with efficient separation. The hazard of bruising is reduced to a minimum.

The purchaser of a No. 12 digger is offered the choice of two types of elevator. The continuous-apron type is supplied for use under average conditions. Extension-type elevators have divided aprons to provide for additional drop under conditions of difficult separation.

A center cleaning device keeps the space between the two diggers free from obstruction. The device is adjustable forward and back for various row widths and to meet varying requirements of field conditions.

Regular Equipment

Machine set for 34-in. row-spacing (also suitable for 32 and 36-in.) or 40-in. row-spacing (also suitable for 38 and 42-in.). Continuous apron or extension-type elevators, as ordered. 36-in. steel wheels. Rod-type deflectors.

Types A, B, C or M shovels. Apron rollers and agitator sprockets—roller and any two sprockets supplied as ordered. Drive chain sprockets—one of three sizes supplied as ordered (smallest size for maximum speed).

Special Equipment

Wheels with or without 6.50 x 24 or 7.50 x 18-in., 4 or 6-ply pneumatic tires (bent axle supplied for 6.50 x 24). Steel 30-in. wheels. Skid ring lugs (set of 4). Scrapers and extension rims. Power drives and tractor hitches for various tractors. Roller-type (2-wheel) foretruck. Stone trap. Flanged rollers. Stone deflectors. Three-speed transmission.

See also pages on Attachments.

Specifications

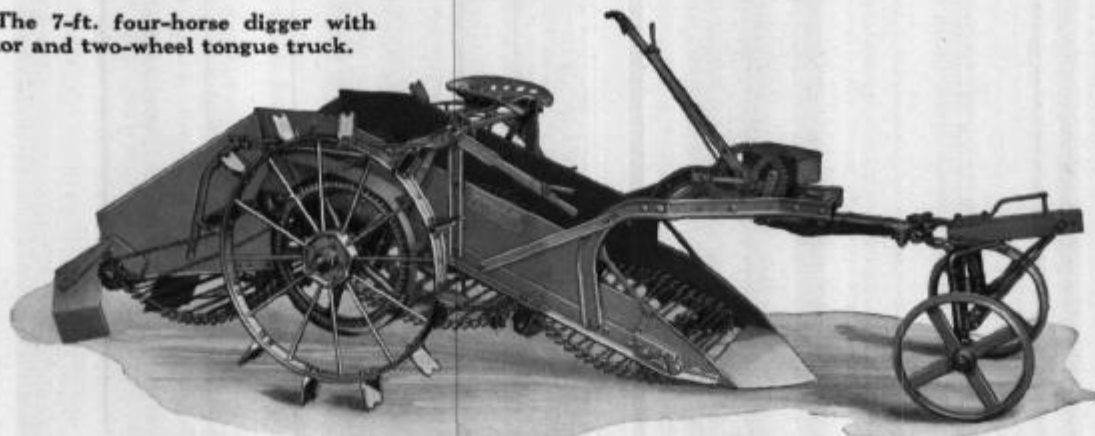
Machine No.	No. Rows	Width Elevator	Net. Weight* (Approx.)
12	2	24-in.	2756 lb.

*Equipped with continuous apron, 34-in. row-spacing, 6.50 x 24 pneumatic-tire wheels less tires and tubes, rod-type deflectors, less power drive and hitch parts, and less 3-speed transmission.



Ground-Driven and Engine-Driven Potato Diggers

Illust. 1—The 7-ft. four-horse digger with 22-in. elevator and two-wheel tongue truck.



- Wide variety of sizes for horse and tractor operation.
- Continuous, extension, or rear shaker-type elevators.
- Ground-driven or engine-driven.

Here are one-row potato diggers that combine strength with light weight to assure them of many years of dependable service. The diggers can be supplied in a variety of sizes adaptable to different local conditions.

The elevators have rod-link aprons similar to those used on the power-drive diggers. The 6-foot diggers come with 22-in. elevators for use with 2 or 4 horses; the 7-foot are available with 22, 24 and 26-in. for use with 4 horses.

All sizes of 7-foot diggers can be furnished with a 3 to 5 hp. Model LB engine which greatly reduces the draft on the team and assures more efficient separation of the soil from the potatoes. A speed-control lever makes it a simple matter to obtain any engine speed between 600 and 1,000 r.p.m. For potato digger use, the engine is equipped with a friction clutch with a sprocket for chain drive, an auxiliary water hopper that more than doubles the cooling capacity, an air cleaner, and a special gravity fuel tank and carburetor that assure constant delivery under all conditions, uphill or downhill.

Regular Equipment

Ground-driven or engine-driven as shown in Specifications. Rear shaker and vine turner or extension elevator as shown in Specifications. Also, continuous-apron elevator in lieu of extension elevator. 2-horse or 4-horse hitch as shown in Specifications. 30-in. or 36-in. steel wheels as shown in Specifications. Also, 30-in. steel wheels in lieu of 36-in. on No. 14. Bent axles for engine-driven diggers, when ordered. Regular or skid-ring lugs. Wheel-type tongue truck or roller-type tongue truck (for horse-hitch), as ordered. Types A, B, C or M shovels as ordered.

Special Equipment

*3 to 5 hp. Model LB engine including friction clutch sprocket, auxiliary hopper, air cleaner and fuel tank for all 7-ft. models (see next page). Also engine attaching parts only (all 7-ft. models). Rear shaker and vine turner for 7-ft. diggers. Extension elevator for 7-ft. diggers. Tractor hitches. 4-horse hitches for 6-ft. diggers in place of 2-horse. Wheels with 5.00 x 21-in. or 6.50 x 24-in. 4-ply low-pressure pneumatic tires for engine-driven diggers (diggers must be equipped with bent axles). 3-in. main wheel extension rims. Road rings (set of 2). Rod-type deflectors. Stone trap. Flanged rollers and stone deflectors. Rolling colter. Large seat.

See also pages on Attachments.

Specifications

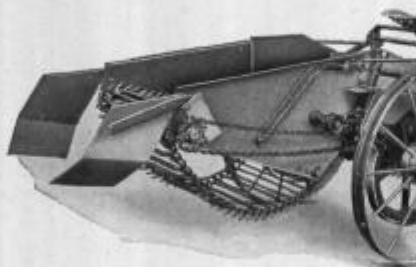
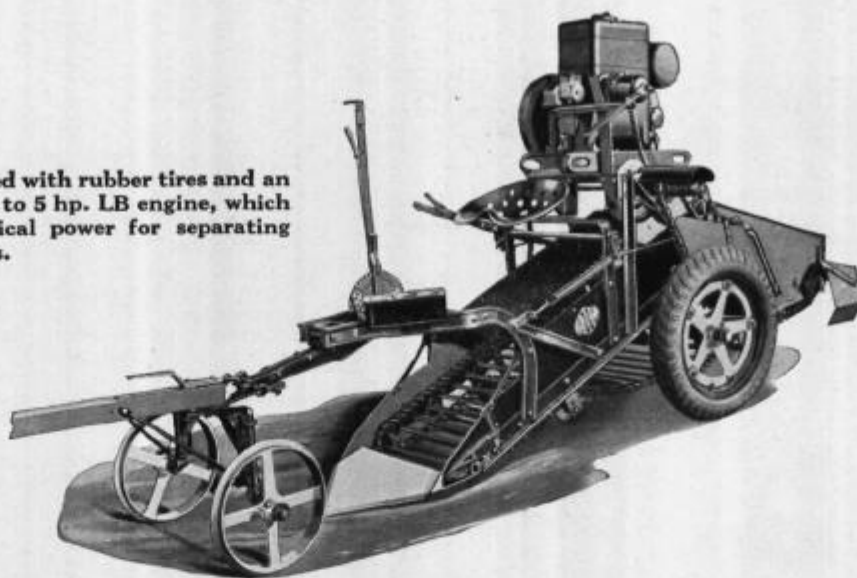
Machine No.	Drive	Size	Width Elevator (Inches)	Elevator	Hitch	Steel Wheel Size, Inches	Net Weight (Approx.)
5	Ground	6-ft.	22	Rear shaker and vine turner.....	2-horse	30	1078 lb.
5A	Ground	6-ft.	22	Extension elevator.....	2-horse	30	1053 lb.
6	Ground	7-ft.	22	Rear shaker and vine turner.....	4-horse	36	1209 lb.
6E	Engine	7-ft.	22	Rear shaker and vine turner.....	2-horse	36	1168 lb.
7	Ground	7-ft.	22	Extension elevator.....	4-horse	36	1184 lb.
7E	Engine	7-ft.	22	Extension elevator.....	2-horse	36	1150 lb.
9	Ground	7-ft.	26	Extension elevator.....	4-horse	36	1262 lb.
9E	Engine	7-ft.	26	Extension elevator.....	2-horse	36	1188 lb.
14	Ground	7-ft.	24	Extension elevator.....	4-horse	36	1243 lb.
14E	Engine	7-ft.	24	Extension elevator.....	2-horse	36	1198 lb.



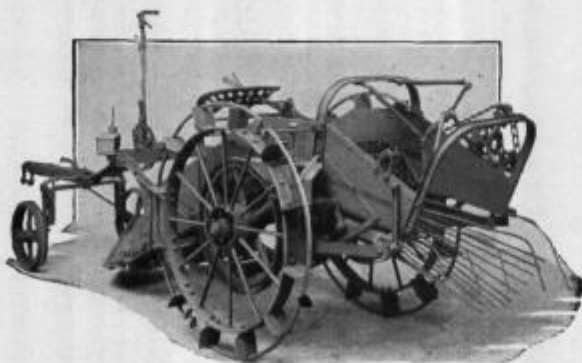
Ground-Driven and Engine-Driven Potato Diggers

(Continued)

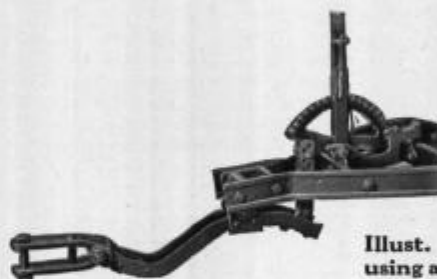
Illust. 1 — Digger equipped with rubber tires and an International Harvester 3 to 5 hp. LB engine, which supplies steady, economical power for separating the soil from the potatoes.



Illust. 2 — Horse-drawn diggers with extension-type elevator have three extra feet of shaker capacity. Also available are continuous apron elevators for average conditions, where additional drop of extension-type is not required.



Illust. 4 — Rear shakers and vine turners are available on machines with 22-in. elevators. Vines and weeds are thrown to the side, leaving the potatoes uncovered in a neat row. The road rings are well worth the slight additional cost when the digger is to be transported over hard roads.



Illust. 3 — Hitch for using a ground-driven or engine-driven digger directly behind the tractor.



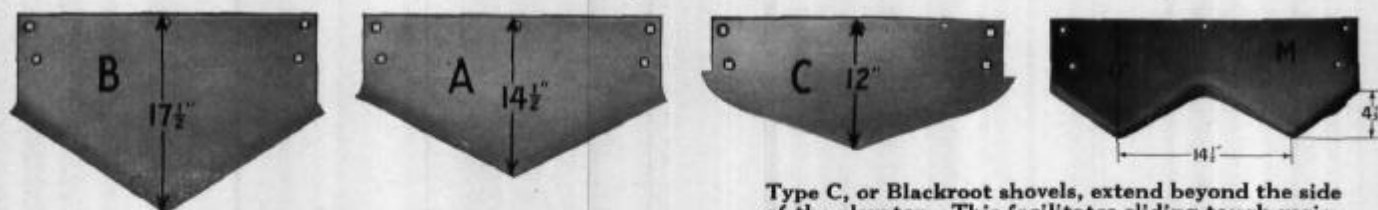
Illust. 5 — Rolling colter for use where the vines are green and heavy, or where the ground is weedy and trashy.



Illust. 6 — Roller-type truck designed for work in uneven ground and heavy vines, for use in place of regular tongue truck.



Attachments for Potato Diggers



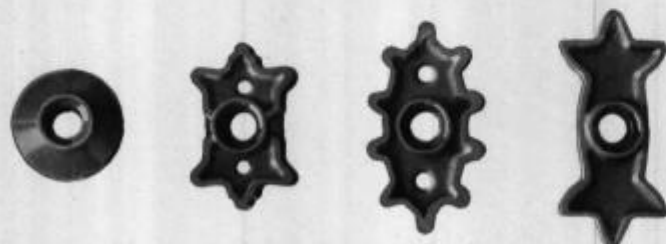
Illust. 1 — International Harvester potato diggers can be supplied with any one of these four types of shovel equipment without any difference in cost.

Type B shovels have a long point and are supplied as regular equipment unless a choice is specified.

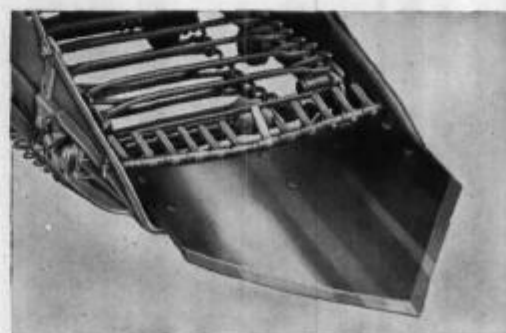
Type A shovels, which have a somewhat shorter point, are available for diggers with 22, 24 or 26-in. elevators.

Type C, or Blackroot shovels, extend beyond the side of the elevator. This facilitates sliding tough varieties of root off the end of the shovel. Available for use with 24 and 26-in. elevators only.

Type M double-pointed shovels are designed to scour well in wet, sticky soil and are of advantage where they can dig deep enough to get under all the potatoes. They are particularly helpful in keeping grass roots and trash from hanging over the edge of the shovel and causing a "break" in the center of the row. Type M shovels can be supplied for use with 22, 24 or 26-in. elevators.



Illust. 2 — Interchangeable agitator sprockets and roller. The roller is used in loose soil where little agitation is needed. The long agitator sprocket at the right provides extreme agitation; agitator sprockets at the center are suitable for average conditions. These parts are made of hard white iron and therefore need no lubrication.

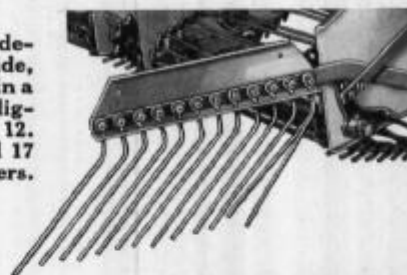


Illust. 5 — This stone trap permits stones underneath the shovel to come up through the trap instead of lodging between the shovel and links. Available as special equipment for power-drive and horse-drawn diggers.



Illust. 3 — All IH potato diggers have split-type sprockets (right), which can be removed without taking out the shaft. Split-rim idler wheels (left) are readily replaced with sprockets when converting a continuous-apron digger for operation with extension-type elevator.

Illust. 6 — Rod-link deflectors, one for each side, which lay the potatoes in a single row behind the digger. Regular on No. 12. Special on Nos. 16 and 17 and horse-drawn diggers.



Illust. 7 — This roller type of foretruck, available for No. 12 digger, is close-coupled ahead of the tractor drawbar.

One roller runs on the top of each bed — keeps the digger shovels at a constant level with relation to the beds regardless of irregularities on the beds or between the beds where the tractor wheels travel.



Illust. 4 — Automotive-type, 3-speed transmission, available as special equipment for power-drive diggers. The reverse gear makes it easy to get rid of a stone lodged in the elevator.



BEET HARVESTING MACHINES

Section 12

Farmall Beet Pullers:

Page

(one-row)

A-7, B-7, BN-7.....	400
A-8.....	400A-400B
C-8.....	401

(two-row)

HM-6.....	402
HM-6A.....	402

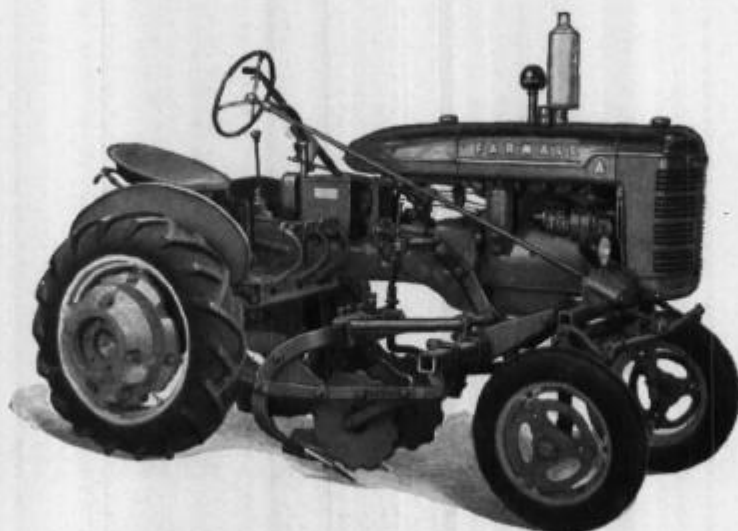
Farmall Beet Harvester:

HM-1.....	403-404B
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A-7, B-7, and BN-7 Farmall Beet Pullers



Illust. 1 — The A-7 one-row beet puller is forward-mounted, in full view of the operator.

- Beets lifted vertically — saves time for toppers and pilers.
- Lifter blades adjustable for small or large beets.
- Ample clearance — rolling colters cut away excess foliage.

Here are simple, efficient direct-connected pullers for Farmall tractors. They lift the beets vertically, leaving them in an upright position which greatly reduces the work of the toppers and pilers. The lifter blades, which have replaceable points, catch the beets just under the bulge and gently ease them out. This makes it possible to operate at shallow depth and thus keep to a minimum the load on the tractor. The standards carrying the blades are readily adjusted for small or large beets. Ample clearance is provided to take care of the leafiest beets.

The A-7, B-7, and BN-7 are one-row forward-mounted machines. The A-7 is designed to work in row spacings from 18 to 28 inches. It is usually operated in offset position ahead of the operator's seat. For work under adverse conditions, however, it can also be set to the left to avoid side draft.

The B-7 is designed for work in rows from 18 to 24 inches. The BN-7 operates in rows from 18 to 22 inches and from 26 to 28 inches.

The raising lever assembly of the A-7 is the same as that of the A-437 cultivator; the B-7 has common parts with the B-236, B-238, and B-435, and the BN-7 with the BN-238 and BN-435. Therefore, the man who already has one of these cultivators can order the puller

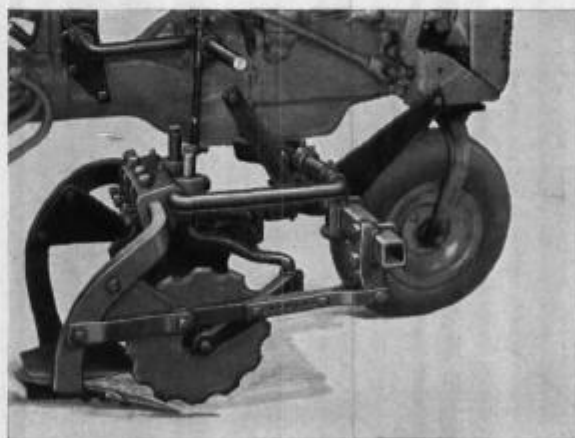
less the lever bundle; he must, however, order the rock-shaft bundle to replace that of the cultivator.

Equipment

Hand lift or power lift, as ordered. 16-in. notched rolling colter. Supplied either as complete machine or less raising lever assembly, as ordered.

Specifications

Machine No.	No. Rows	Net Weight (Approx.)
A-7	1	326 lb.
B-7	1	318 lb.
BN-7	1	



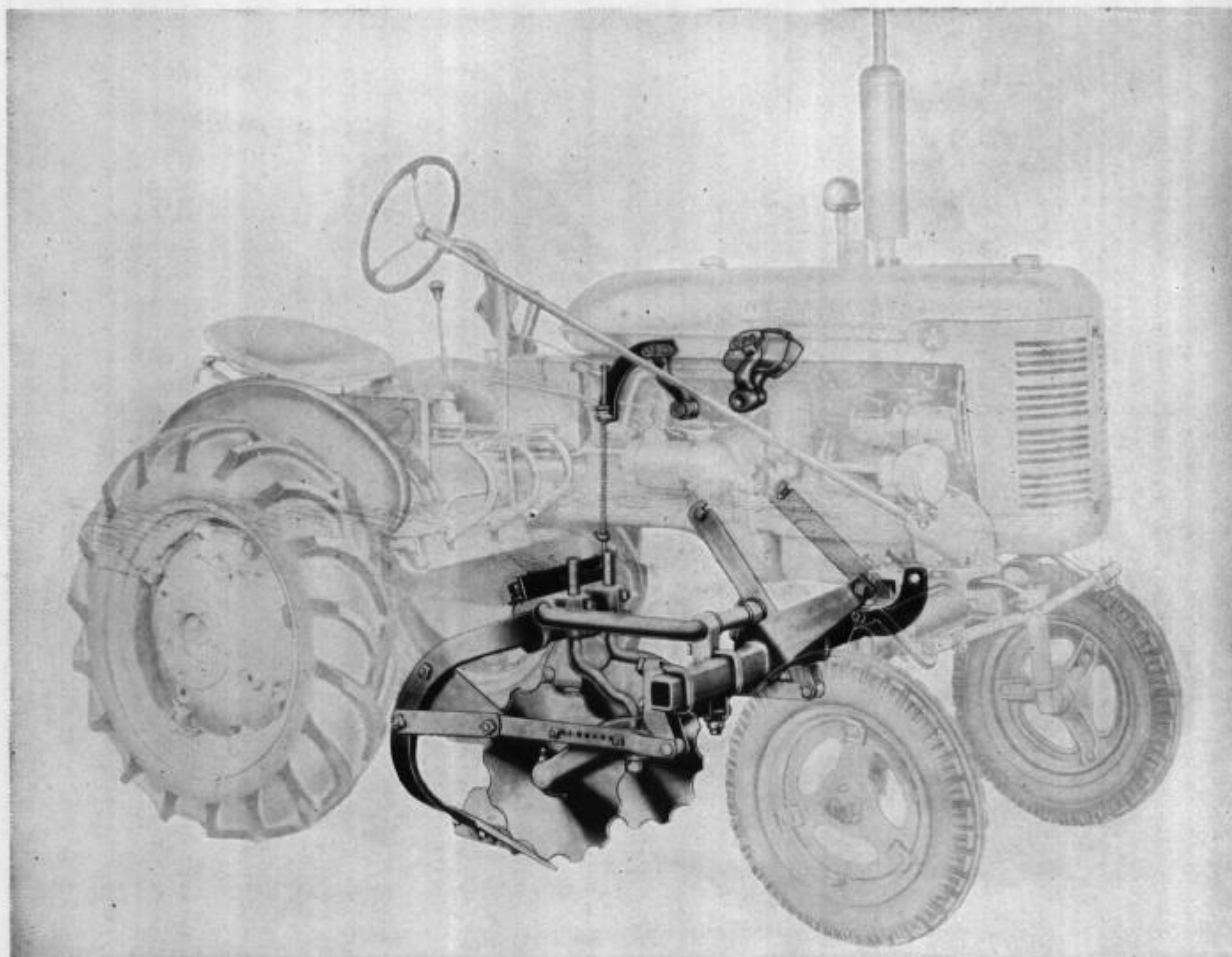
Illust. 2 — Close-up of the B-7 one-row beet puller. Note the parallel-link construction.



Farmall Super-A

A-8 Beet Puller

One-Row, Forward-Mounted



Illust. 1 — The A-8 beet puller is an easy-to-operate, "quick-change" puller which will operate in most any row spacing from 16 to 28 inches. It will handle all sizes of beets.

- Quick-change . . . minimum loss of time between jobs.
- Simple and easy to operate.
- Beets lifted vertically . . . saves time for the toppers and pilers.
- Colters and lifter blades adjustable for large and small beets.
- Ample clearance . . . rolling colters cut away excess foliage.
- Farmall Touch-Control for effortless raising and lowering.
- Farmall Touch-Control for accurate, instantaneous depth adjustments.

Regular Equipment

One PORC-290 Plain (notched blade) rolling colter, 16-in. R.H.

One PORC-291 Plain (notched blade) rolling colter, 16-in. L.H.

Special Equipment

PO-2583 Detachable point, L. H. (steelcast).

PO-2584 Detachable point, R.H. (steelcast).

Specifications

Beet Puller	Universal Unit Required	No. Rows	Row Spacing (inches)	Net Weight (Approx.)
A-8	Universal Rockshaft	One	16 to 28	.....



Farmall Super-A A-8 Beet Puller

One-Row, Forward-Mounted (Continued)



Steel Puller Points

Detachable steel puller points are furnished as regular equipment.

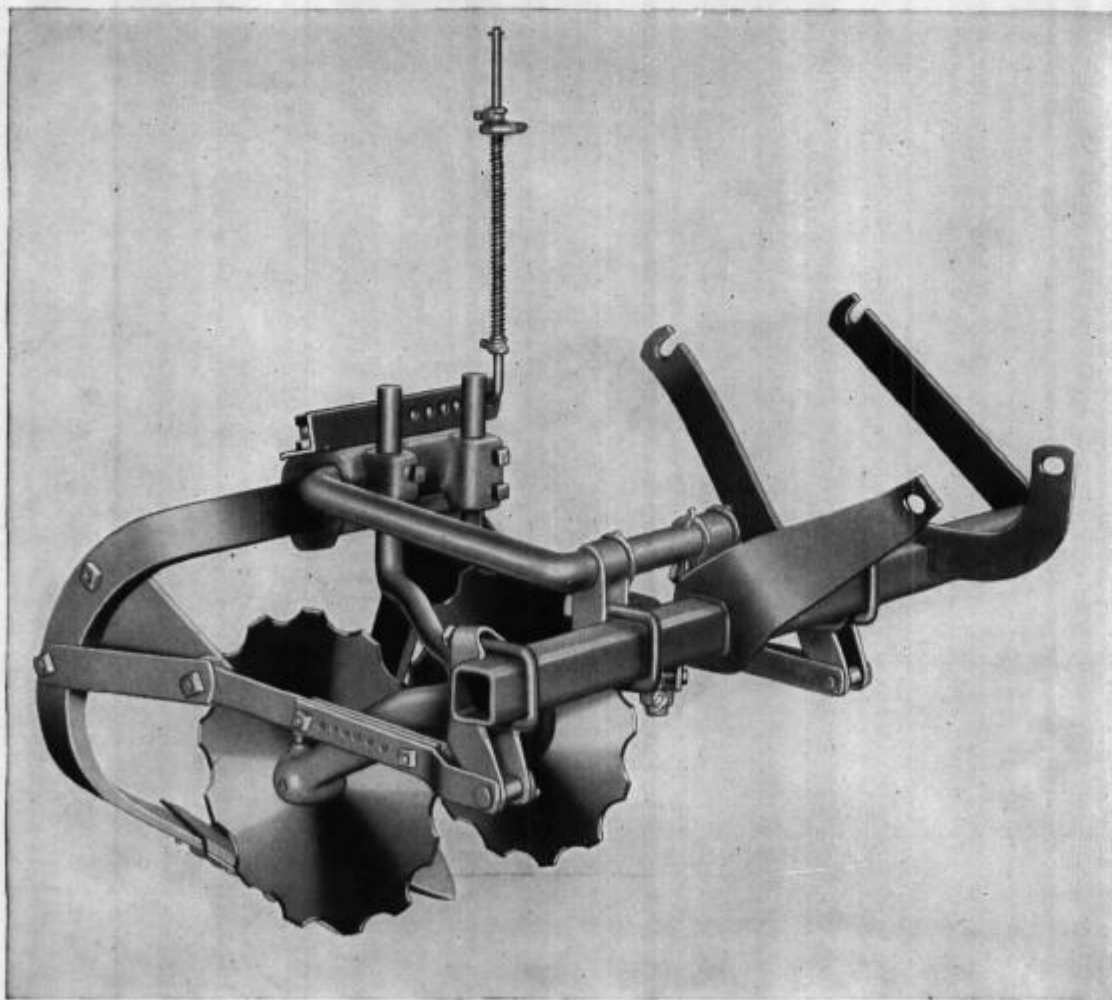
18 and 22 inches or 16 and 24 inches, adjustments may be made to straddle three rows.

Simple, Efficient Beet Puller

The A-8 is a one-row forward-mounted beet puller which is designed to work as an integral unit with the Farmall Super-A tractor. Adjustments are provided for rows spaced 18, 20, 22, 24, 26, and 28 inches apart; and for alternate rows spaced 18, 22, 16, and 24 inches. When row spacings are 18, 20, 22, 24, 26, and 28 inches, adjustments may be made to straddle two rows. When row spacings are 18, 20, and 22 inches, or alternating rows

For Large and Small Beets

The A-8 is a simple, efficient puller which lifts the beets vertically and leaves them in an upright position which greatly reduces the work of the toppers and pilers. The lifter blades catch the beets just under the bulge and gently ease them out. This makes it possible to operate at a shallow depth and thus keep to a minimum the load on the tractor. The standards carrying the blades are readily adjustable for large and small beets. Ample clearance is provided to take care of the leafiest beets.



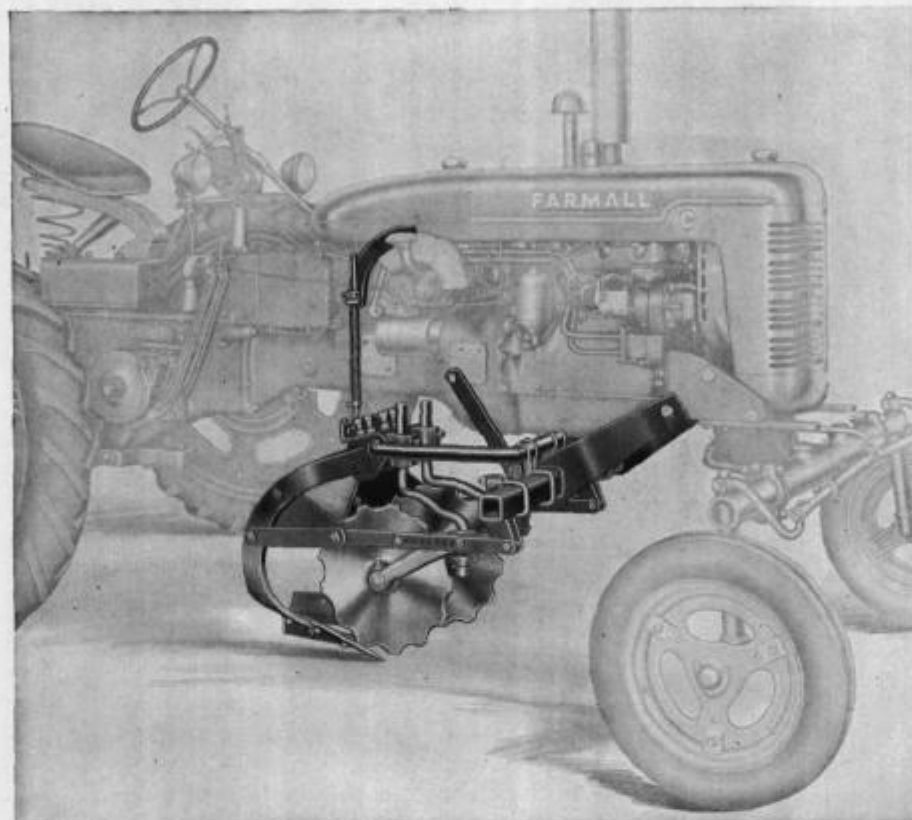
Illust. 1 — The A-8 beet puller unit is shown here detached from the tractor. Note the simplicity of construction.



Farmall C

C-8 Beet Puller

One-Row, Forward-Mounted



- Lifter blades raised and lowered and working depth regulated by Touch-Control.
- Wide range of adjustments for different row spacings.
- Standards adjustable for small or large beets.
- Lifter blades have detachable steel points.
- Notched rolling colters cut the trash and reduce the quantity of soil lifted.



Illust. 1—The C-8 one-row beet puller mounted on the Farmall C tractor. It is recommended that the tractor be equipped with wide-tread front axle.

This one-row, direct-connected beet puller is designed for Touch-Control operation with the Farmall C. The puller is mounted ahead of the tractor rear wheels. It is quick-change attached to the tractor front mounting pads by means of slip-on brackets and bolts with tapered-face heads. Parallel-action linkage connects the beams to the mounting frame. The parallel action enables the lifter blades to always have the proper pitch regardless of the working depth.

Adjustments have been provided for even spaced rows of 20, 24, 26, and 28 inches and for alternate rows spaced 18-22 and 16-24 inches. When row spacings are 24, 26 or 28 inches, adjustments may be made to straddle two rows. When row spacings are even rows of 20 inches, or alternate rows of 18-22 or 16-24-inch, adjustments may be made to straddle four rows. Adjustments may also be made to straddle four 22-inch rows when the tractor is equipped with extended 88-inch rear axle.

Regular Equipment

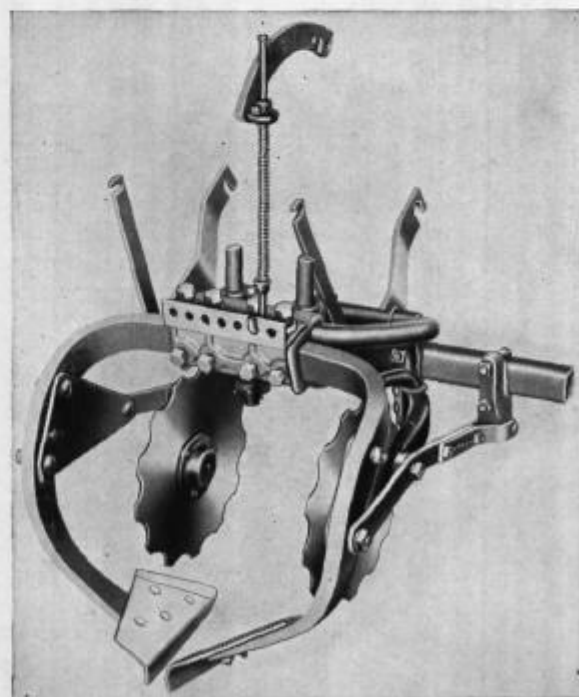
Detachable steel puller blade points. Notched 16-inch rolling colters.

Special Equipment

Steelcast detachable puller blade points.

Specifications

Machine	No. Rows	For rows spaced (inches)	Mounting	Net Weight (Approx.)
C-8 Beet Puller	1	20, 22, 24, 26, 28 or alternate 16-24 and 18-22	Slip-on brackets bolted to mounting pads	285 lb.



Illust. 2—The C-8 beet puller is a simple, sturdily built, one-row unit operated by Touch-Control. Note the convenient slip-on brackets which are quickly bolted to the tractor mounting pads.



HM-6 Farmall Beet Puller

- Long, low hitch with rear gauge wheel.
- Beets lifted vertically — saves time for toppers and pilers.
- Lifter blades adjustable for small or large beets.
- Puller units staggered — ample clearance.



Illust. 1 — The HM-6 two-row beet puller for use with Farmalls H, M, and MD.

The HM-6 is a two-row rear-mounted power-lift machine. It has a long, low hitch for steady operation, and the puller units are staggered so that they cannot interfere with one another when working in uneven ground.

The rear gauge wheel regulates the depth of the puller points. A convenient lever provides sidewise adjustment to keep the puller units accurately centered on the rows.

The machine lifts the beets vertically, leaving them in an upright position, which greatly reduces the work of the toppers and pilers. The lifter blades, which have replaceable points, catch the beets just under the bulge and gently ease them out. This makes it possible to operate at shallow depth and thus keep to a minimum the load on the tractor. The standards carrying the blades are readily adjusted for small or large beets. Ample clearance is provided to take care of the leafiest beets.

The puller will work on Farmalls H and M in rows from 18 to 28 inches. On Farmall-H the puller spacings are 18, 20, 26, and 28 inches when equipped with regular

rear axle, and 21, 22, and 24 inches with wide axle. Farmall-M with regular axle takes all the row widths except the 24-in. which requires the long axle.

The machine can also be supplied with friction release brace rods to the puller standards for use in stony or stumpy ground. When so equipped it is listed as the HM-6-A.

The owner of an H-86 two-way plow can purchase the puller less the hitch adjusting lever since these parts are identical on both implements.

Regular Equipment

Supplied either as complete machine or less hitch adjusting lever (common with H-86 plow), as ordered. Power lift only (Lift-All cylinders not included). Rear wheel with rim for 6.00 x 16-in. tire (tire not included). 16-in. notched rolling colters (one to each row).

Special Equipment

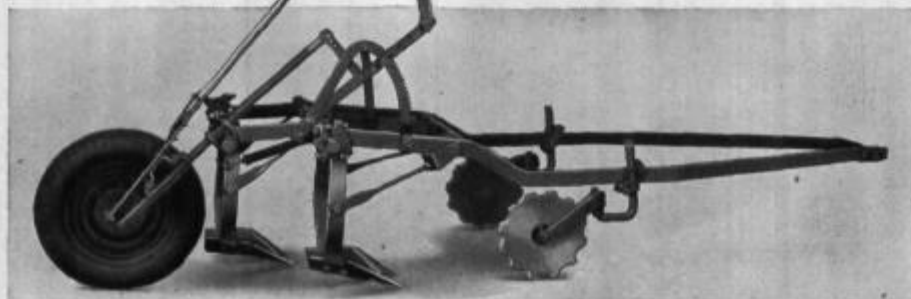
Friction-break links to protect lifters when working in stony or stumpy ground. Extra colters for operation with two for each row.

Specifications

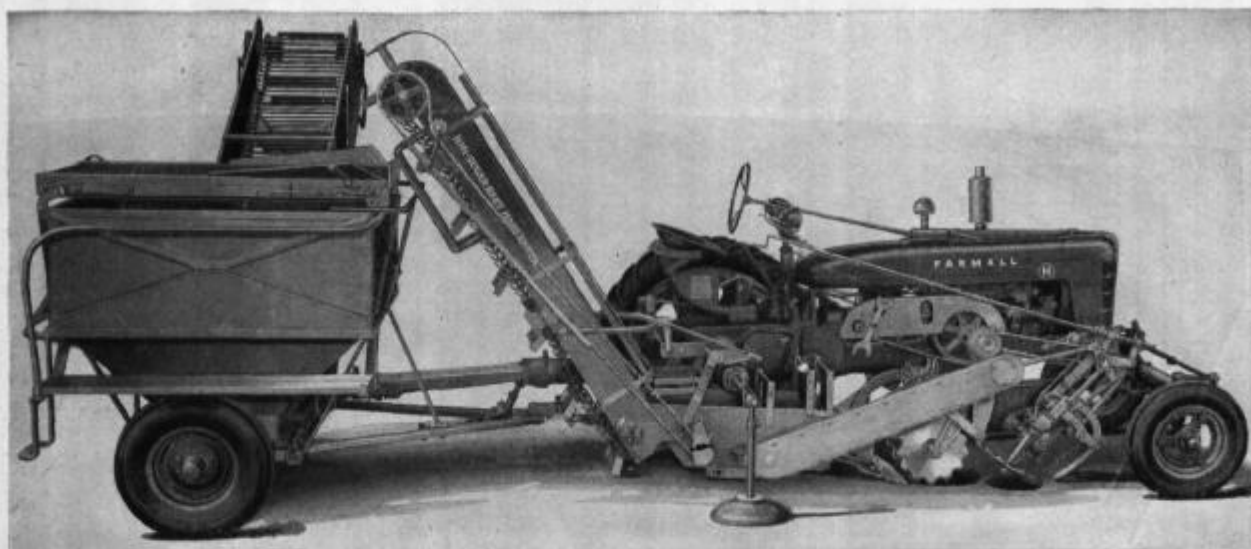
No.	Net Weight (Approx.)
HM-6	838 lb.
HM-6-A*	825 lb.

*With friction brake links.

Illust. 2 — Side view of the HM-6 detached from the tractor.



HM-1 Sugar Beet Harvester



Illust. 1 — HM-1 sugar beet harvester mounted on a Farmall-H tractor equipped with wide-tread front axle, Lift-All, belt pulley drive and 100-in. rear axles. (Right tractor rear wheel removed to show mechanism.)

The HM-1 sugar beet harvester is designed to operate with Farmalls H, M, or MD tractors. In one continuous operation, the sugar beet harvester tops, lifts, cleans, and loads the beets in a special two-wheel cart pulled behind the tractor. The cart is equipped with a moving belt on which two men sort the beets from the clods and trash, and drop the beets into the cart. The clods and trash "go overboard" at the rear of the cart. An open-rod-link elevator extending across the bottom of the cart unloads the beets into a hauling truck and at the same time further cleans the beets.

Specifications

Dimensions:

Length, tractor and cart	22 ft.
Width, tractor	8½ ft.
Height { Cart elevator	9 ft.
{ Harvester elevator	8 ft.
Turning radius (approx.)	17 ft.

Weight:

Farmall-H with harvester and cart	7663 lb.
Farmall-M with harvester and cart	8722 lb.
Farmall-MD with harvester and cart	9057 lb.

Capacities:

Beets harvested, tons per hour (in beets yielding 20 tons per acre)	6
Cart bin, tons	1½

Crew:

Favorable soil conditions, number of men	1
Unfavorable soil conditions, number of men	3

Tire sizes recommended:

Front—Farmalls H, M, and MD	6.00 x 16-in.
Rear { Farmall-H	10 - 38-in.
{ Farmalls M and MD	11 - 38-in.
Cart	7.50 x 16-in.

Under favorable conditions this machine will harvest 5 to 6 tons of beets an hour in fields yielding 20 tons per acre.

Row spacings from 20 inches up can be obtained, depending on the tractor rear axle equipment. For details refer to the Owner's Manual.

To mount the sugar beet harvester on Farmalls, the tractors must be equipped with wide-tread front and rear axles, hydraulic Lift-All, belt pulley, and standardized power take-off. The Farmalls used in the beet growing territories are usually equipped with wide-tread front and rear axles and Lift-All. One 2¼-inch diameter hydraulic cylinder is required, but it is furnished only when ordered because the purchaser may already have one for other implements.

Special Equipment

A plain topper disk is available in place of the notched disk which is regular.

An adjustable windrowing curtain is available as a special attachment in place of the regular single-row curtain. A hand lever conveniently located near the tractor seat permits the operator to quickly and easily shift the curtain from side to side so that the beet tops from as many as four rows, spaced 20 or 22 inches apart, may be formed in a single windrow. As a result, fewer windrows are formed in the field and time will be saved in piling or collecting the beet tops.

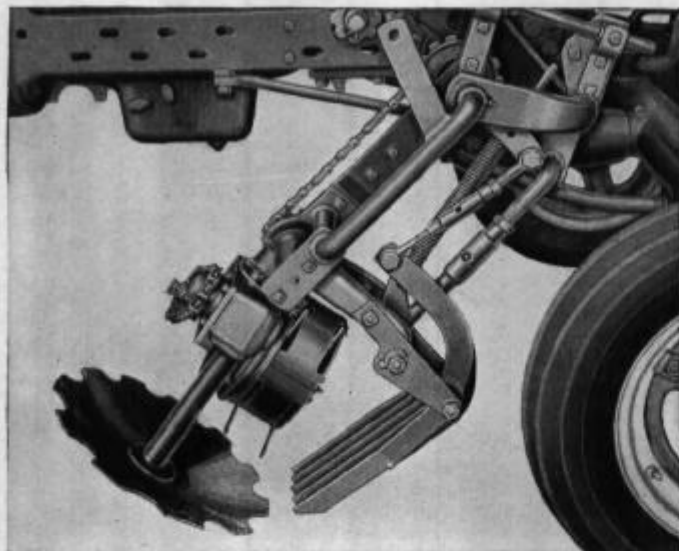
How the Sugar Beet Harvester Operates

The operation of the sugar beet harvester can best be described by dividing it into several units which will be referred to as the beet topper, the beet lifter, the cleaning rolls unit, and the elevator which are all carried on the tractor, and the special two-wheel cart with sorting belt and link elevator hitched behind the tractor.



HM-1 Sugar Beet Harvester

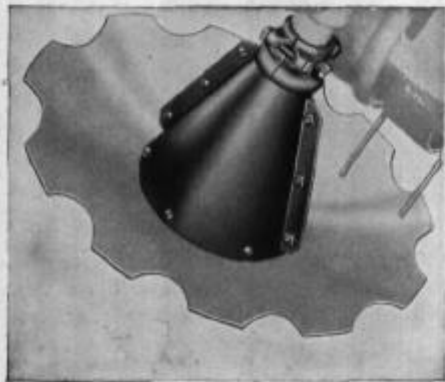
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Illust. 1—The notched disk illustrated is regular. A plain disk will be furnished when ordered.

The beet topper unit is mounted close to the right front tractor wheel and consists of an 18-in. concave disk which tops the beets, and a rotating flinger which throws the tops and foliage against a canvas from where they drop to the ground in a row. A drag-type finder, mounted ahead of the topping disk and connected to the disk support by linkage, slides over the beet tops and accurately gauges the amount of crown to be removed from each beet.

A screw-type regulator controlled by a crank within easy reach of the operator makes it possible to quickly change the vertical distance between the finder and topping disk. This makes it easy to accurately vary the amount of crown removed from the beets. Several adjustments are provided in the linkage connecting the finder to the topper disk support for adapting the topper unit to either flat or peaked crown beets, to small or large beets, and also to provide correction for dullness of the disk or toughness of the beets.



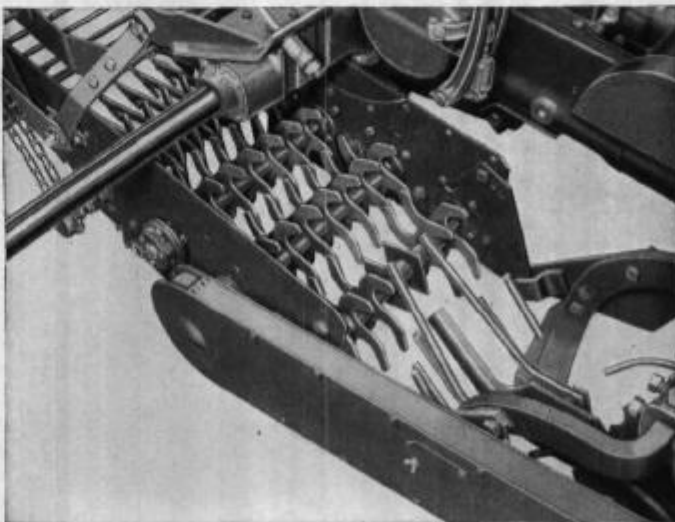
Illust. 2—A cone shaped device is regularly supplied and is recommended to aid top disposal when working in extremely heavy foliage conditions and with large crown beets. It is easily attached to the topper disk spindle.

The beet lifter unit is mounted back of the topper unit and consists of two blades similar to those used on conventional beet pullers. The blades lift the beets out of the ground.

Mounted directly ahead of the lifter blade points are two 16-in. notched rolling colters which cut the trash so that it does not interfere with the lifter blades and cleaning of the beets. The colters reduce the size of the clods and the quantity of dirt carried to the cleaning trough along with the beets. All these features aid in cleaning the beets.



Illust. 3—Beet lifter unit showing lifter blades and rolling colters.



Illust. 4—The cleaning rolls unit showing the 4 rows of kickers (canvases not shown).



HM-1 Sugar Beet Harvester

(Continued)

The cleaning rolls unit. From the lifting blades the beets are guided into the cleaning rolls unit by extension rods on the puller blades. The unit is equipped with four shafts on which are mounted kickers similar to those used in many beet dumps. There are 7 kickers on the first and third shafts and 8 on the second and fourth shafts, or a total of 30 kickers. The kickers dispose of most of the loose dirt and small clods. The unit is chain driven from a sprocket on the belt pulley. Each row of kickers is driven by spur gears and the shafts revolve in sealed ball and roller bearings.

Three canvases with rods in the bottom hem hang vertically over the cleaning trough and keep the beets in constant contact with the aggressive action of the kickers.

Elevators. The beets are delivered from the cleaning trough to an elevator equipped with a rod-link (potato digger type) open chain. On the chain are steel finger flights which carry the beets up to the trailing cart bin.



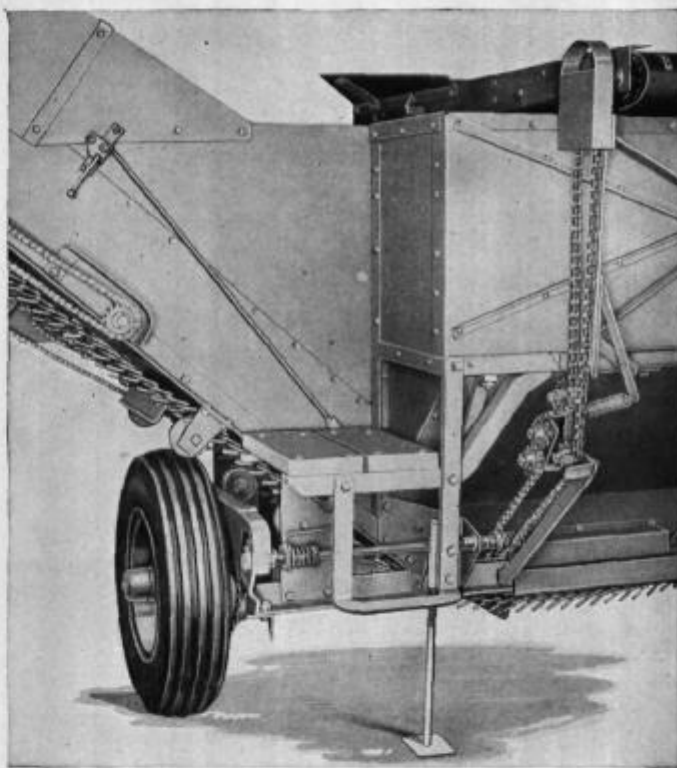
Illust. 1—View of the elevator and cart. The sorting belt on the cart is in the raised position.

Two-wheel cart and sorting belt. Pulled behind the tractor is a two-wheel cart equipped with a metal bin, a sorting belt, and an elevator. Clods, trash, or sticky dirt delivered with the beets, drop on the sorting belt on top of the cart. Two men, standing on platforms on each side of the cart, sort the beets from the clods and trash and drop the beets into the bin. The clods and trash "go overboard" at the back of the cart. If soil conditions are such that the beets are clean as they are elevated to the cart, the belt can be tilted up out of the way and the beets dropped directly into the bin. The sorting belt is ground-driven at one-half

ground speed from the left-hand cart wheel. A manually-operated jaw clutch is provided to engage and disengage the sorting belt drive.

The cart bin is unloaded into the hauling truck by a (potato digger type) chain elevator which extends across the bottom of the cart bin. The open-link chain removes any remaining loose dirt and small clods that may remain with the beets. The elevator is driven from the tractor power take-off.

The cart can be unloaded either at the end of the field or, if the field footing is firm, the hauling truck can be driven to the beet harvester and the cart unloaded while the machine is in operation. It takes 1 to 1½ minutes to unload the cart bin. The wheel treads of the cart are adjustable to fit rows spaced 20 inches and up.



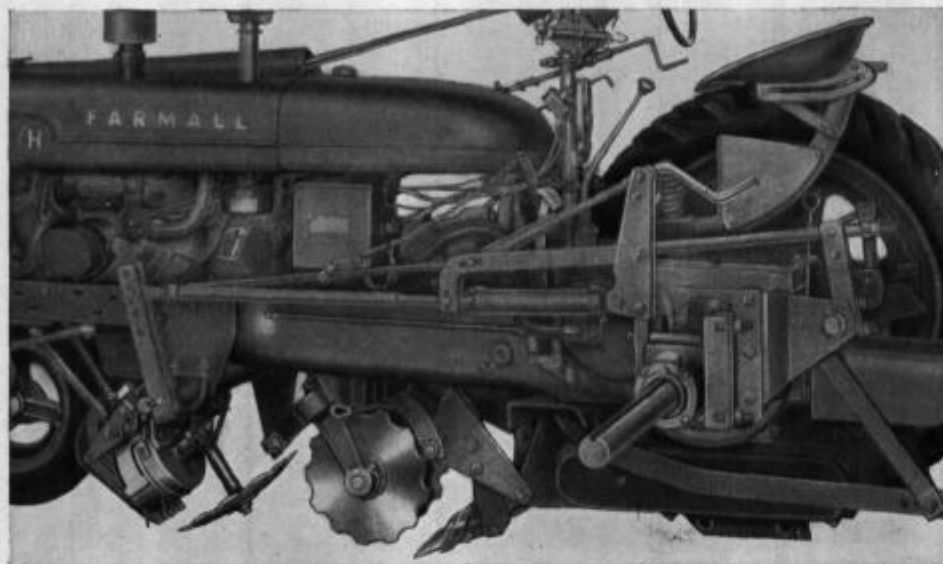
Illust. 2—Rear view of the cart showing the convenient location of the lever for engaging or disengaging the chain drive of the sorting belt. The stand supports the rear of the cart when the cart is not attached to the tractor and is retractable.

Beet harvester raising mechanism. The units mounted on the tractor are raised by the tractor hydraulic power lift. The hydraulic lift cylinder and the depth control mechanism are located on the left-hand side of the tractor. The depth control consists of a crank-operated screw which regulates the depth at which the puller blades operate. When the harvester units are raised, the elevator at the rear of the tractor is tilted



HM-1 Sugar Beet Harvester

(Continued)



Illust. 1 — Left side of tractor, with wheel removed, showing hydraulic cylinder which lifts the harvesting units and the crank-operated screw which adjusts the operating depth of the beet lifter blades. The crank on the far side permits changing the vertical distance between the finder and the topping disk while in operation. The reverse gear lever stop unit is attached to the tractor steering post and linked to the lift rod by means of a chain.

forward so that it does not strike the cart bin when making short turns. The lift is so designed that regardless of the depth at which the lifter blades are working, the blades together with the topper unit, cleaning trough, and elevator, are always raised to the same height.

A safety device eliminates the possibility of damag-

ing the topper unit by accidentally driving the tractor in reverse gear when the topping unit is in operating position. The machine must be in a raised position before the operator can shift into reverse gear. The device is mounted on the tractor steering post and is operated by linkage from the harvester lift rod.

Outstanding Features

Only one tractor is required to harvest beets and deliver them to the hauling truck.

Once the beets are lifted, they never again touch the ground. This eliminates the possible loss of weight which usually happens if beets are exposed in rows or piles to the air and sun.

Designed for the small or average grower who has from 20 to 60 acres of beets. Growers having large acreages can use several machines.

A small crew is required. A maximum of three men are required—one on the tractor and two for sorting. In favorable soil conditions when beets are delivered to the cart clean, only one man is required.

Beets can be harvested any time the tractor can be operated in the field. Tests have proven that the machine will work in either wet or dry gumbo soil.

Tare and haul-back held to a minimum.

The operator can easily and quickly adjust the topping unit so that it removes the amount of crown desired and then the finger-finder accurately raises and lowers the topping disk according to the height the beets are out of the ground. From the time the beets are lifted out of the ground they are continually being cleaned—first, by the aggressive cleaning trough, second, by the open-link elevator, third, by the two men who pick the beets from the clods and trash, and then again by the open-link elevator as the beets are loaded from the cart to the hauling truck. If, by chance, any beets are dropped on the sorting belt that are not correctly topped or are excessively dirty, the men on the cart can lay them aside and remove the top and dirt by hand while the machine is turning at the end of the row or while the cart is being unloaded.

Instant control. The beet topping and lifter units are forward-mounted on the tractor so that they are near the front wheels of the tractor. This makes it easy for the operator to guide the machine down the row because these units respond instantly as the tractor is steered.



COTTON PICKER

Section 13

Cotton Picker:

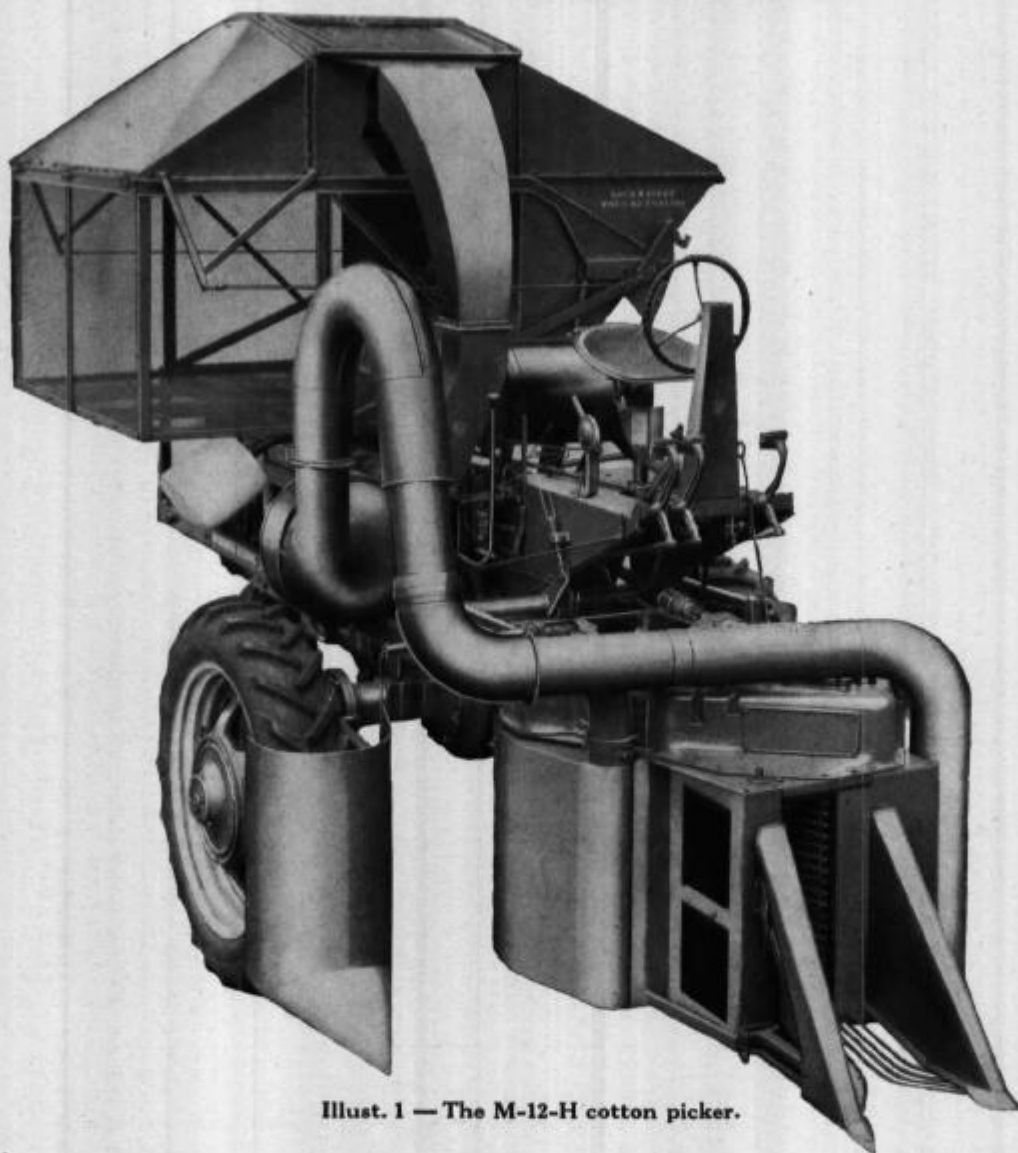
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M-12-H Cotton Picker



Illust. 1 — The M-12-H cotton picker.

The M-12-H cotton picker is a one-man, one-row spindle-type machine that will pick an average of 95 percent of the open bolls from cotton plants growing up to 5 feet high without damaging the plant or disturbing the unopened bolls.

Capacity

Operating in first speed at 2 miles per hour, in fields averaging one bale per acre of open cotton, the machine will pick about 1,500 pounds of seed cotton—which usually is enough to produce a 500-pound bale of lint—in approximately one hour and thirty minutes. This allows 15 minutes for turning at the ends of the rows and dumping the basket. In other words, the machine will average about a bale in an hour and 15 minutes actual picking time.

Description of Machine

The M-12-H cotton picker is a complete unit comprising (1) the picking mechanism and (2) the tractor. The picking mechanism, not available without the tractor, consists of a picking drum, an air conveyor system, the cotton basket and the necessary drives and control mechanism. The tractor, which provides the power to

propel the machine and operate the picking mechanism, is a Farmall-M specially modified for high clearance and reverse travel, yet fully adapted for other farm operations upon removal of the picking mechanism and further modifications.

Regular Equipment

M-12-H cotton picker mounted on a modified Farmall-M tractor equipped with one 7.50 x 20-in., 6-ply pneumatic-tired guide wheel and two 11-38-in., 6-ply tires for the drive wheels. Hydraulic Lift-All to raise and lower picker unit. Hydraulic Lift-All to raise and lower basket.

Special Equipment

Drive wheel shield. Attaches in front of right drive wheel and eliminates damage to cotton plants.

Radius rod shield. Fits under the rods which help to support picker drum and has same function as above equipment.

Tractor conversion package. Consists of parts required to convert the cotton picker tractor for use on other field operations.



M-12-H Cotton Picker

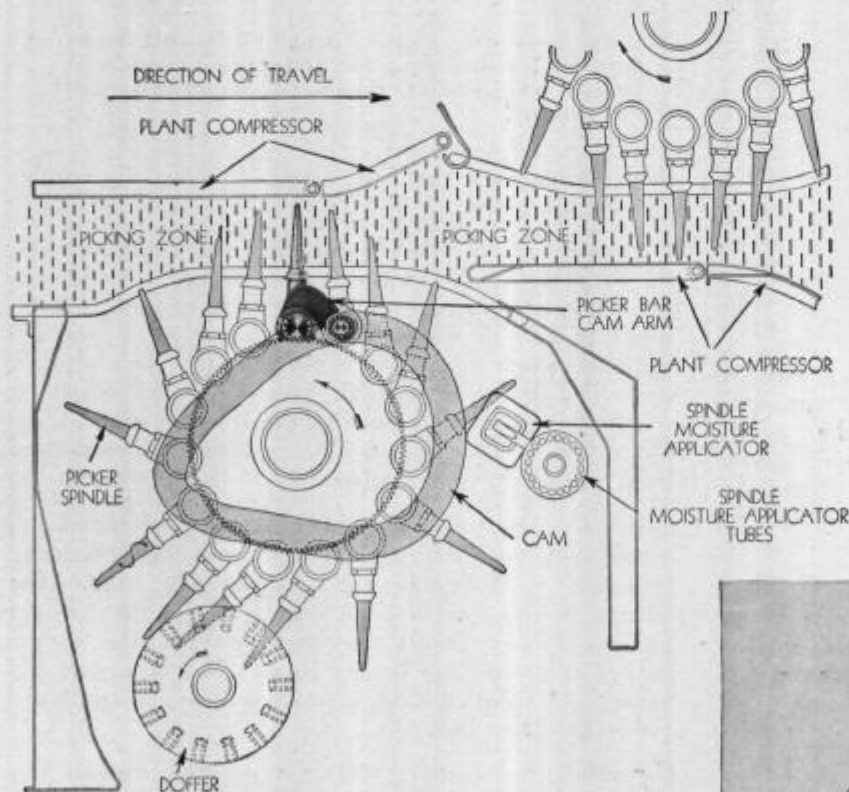
(Continued)

Picking Mechanism

Picking drum. Mounted at the front of the machine is the picking unit, housed in a sturdy steel box. The unit consists of two rotating, spindle-equipped picker drums between which pass the plants as the machine moves along the row.

Spindles. Each drum in the picker box is equipped with 15 cam-actuated picker bars on which are mounted 20 rotating spindles having tiny barbs which catch the lint. Each of the 600 spindles is driven by individual bevel gears enclosed in the picker bars. The spindles are spaced so as to pick a high percent of the open cotton but permit room for the green, unopened bolls to remain unharmed on the plants.

The rotative speed of the picker drums is synchronized with the traveling speed of the tractor—the projecting rotating picker spindles enter and withdraw from the plants without any raking action and thus do not injure the cotton plant. The spindles rotate at 2,000 r.p.m. at the normal 2 m.p.h. travel speed. As they penetrate the plants and contact the lint in the open bolls, the spindle barbs catch the cotton and extract it.

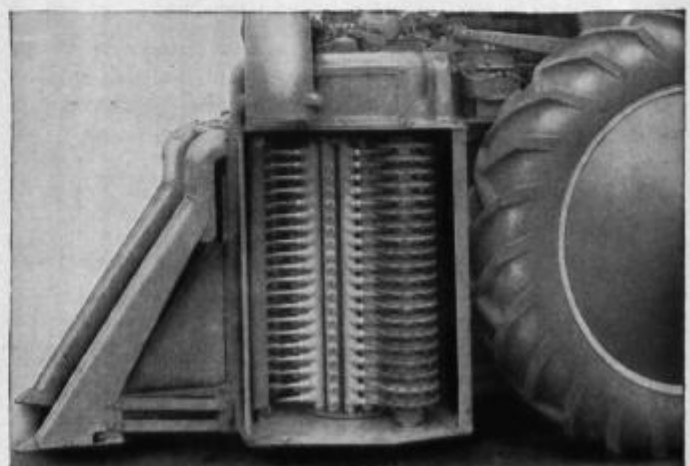


Illust. 2—(right) Side view of the picking mechanism. Barbed revolving spindles are mounted on the picking drum in the center. Revolving disks with rubber doffers, at the right, remove the cotton from the spindles. Moisture applicators at the left moisten the spindles before they enter the cotton plant to aid in doffing the cotton.

Specifications

Drive wheel tires (2, pneumatic)	11-38-in. 6 ply
Guide wheel tire (pneumatic)	7.50 x 20-in., 6 ply
Row widths	38 to 42 in.
Tread (center to center of drive wheels)	78¾ in.
Picking speeds:	
Normal	2 m.p.h.
Final or special picking	2¾ m.p.h.
Capacity of basket (approximate)	½ bale or 750 lbs. of seed cotton
Capacity of water tank	25 gal.
Number of picker drums	2
Number of picker bars per drum	15
Number of picker spindles per bar	20
Total number of picker spindles	600
Spindle rotating speed, r.p.m. at 2 m.p.h.	2000
Spindle rotating speed, r.p.m. at 2¾ m.p.h.	2900
Length, overall	16 ft.
Width (across basket)	9 ft.
Height:	
Basket lowered	12¼ ft.
Basket raised	16½ ft.
Approximate weight of complete machine (with water in cooling system, less fuel, and less liquid in spindle moistening system)	10,250 lb.

Illust. 1 — (left) Diagram of top of picker mechanism showing various positions assumed by spindles as drum rotates. Spindles are mounted on cam-actuated bars which cause spindles to enter and withdraw from the picking zone without damaging the plants. Spindles also assume positions for maximum efficiency when passing under moisture applicator and cotton doffer. The rotation of the picker drum is synchronized with the forward speed of the tractor.



INTERNATIONAL HARVESTER



Farmall M-12-H Cotton Picker

(Continued)

Picking Mechanism

Spindles (Continued.) As the drums revolve, the cam-actuated bars withdraw the cotton-laden spindles from the plants and carry the cotton into the interior of the picker drum box. Here the cotton is removed from the spindles by rotating rubber doffers which slide the lint off the tapered spindles and drop it at the entrance of the air conveyor system located in the bottom of the drum box doors.

Spindle moistening system. As an aid in keeping the spindles clean, a spindle moistening system is incorporated into the picking unit. By means of rubber applicators, a film of water is applied directly to each spindle just before it penetrates the plants to gather the cotton. The system consists of a water tank and two metering devices with two sets of water applicators and their supports. Small control valves with dial-type indicators serve to control the supply of water fed to the applicators.

Air conveyor. From the bottom of the drum box doors, one on each side of the drum box, the cotton is conveyed by suction to a special type fan. The same fan blows the cotton into the large storage basket located above the tractor. As the cotton enters the basket, it is blown against a grating along the top of the basket through which the air blast passes and carries away any loose dirt and trash. The cotton drops into the basket.

Basket. The basket is completely filled without any attention from the operator. When the basket is filled the cotton is dumped into a wagon or truck. The basket is raised and the cover opened by two hydraulic cylinders powered by the Hydraulic Lift-All.

One-man operation. The driver is the only attendant required to operate the machine. He sits high and comfortably above the drum box where he has a full view of the cotton plants being picked, which flow continuously through the picking area of the drum box.

Modified Farmall-M

As already indicated, the M-12-H cotton picker is supplied with a specially modified Farmall-M tractor which provides high clearance and reverse travel for the cotton picking operation. This tractor may be converted after the picking season is over into a conventional Farmall-M tractor for use in other farm operations.

Final drive. The chief modification is the final drive (front of picker). This consists of a pinion and gear which (1) raises the tractor 11 $\frac{1}{4}$ inches, (2) reverses the five forward traveling speeds, and (3) reduces these speeds for efficient picking of cotton. The final drives are attached to specially designed axle carriers with outer flanges. When the tractor is to be used for other farm work, the final drive housings are detached from



Illust. 1 — Cotton Picker Farmall-M showing modifications for mounting the cotton picker. Special final drive units bolt to the specially designed flanged axle carriers.

these flanges and the wheels are slid onto the regular axles of the tractor.

High rear wheel. To elevate the rear (radiator) end to the same height as the front (final drive) end, the modified tractor comes equipped with a 7.50 x 20-in. single pneumatic-tired guide wheel and fork, attached to the standard upper bolster pivot shaft. This wheel is controlled from an upright steering wheel which is connected by a roller chain to the steering shaft. The wheel and fork can readily be replaced with standard front wheels and lower bolster.

Controls. The tractor controls are extended to convenient positions on the cotton picker platform. Standard tractor seat and support are used. The tractor is equipped with a regular hydraulic Lift-All pump. Two cylinders are used to raise the cotton basket and open the basket cover when emptying the basket. A third cylinder is provided to raise and lower the picker drum box.

Converting the tractor. To convert the tractor for other farm uses the complete machine is first driven to a suitable location for storage, preferably under cover. Blocks are placed under the picker drum and a simple hoist can be used to support the rear end of the picker while it is being detached from the tractor. When free the tractor is rolled out and is ready for conversion. All parts necessary for conversion are included in the tractor conversion package, supplied as special equipment.



HAMMER MILLS, FEED GRINDERS, CORN SHELLERS AND CANE MILLS

Section 14

Hammer Mills:

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No. 6 Hammer Mill

- Large capacity for power requirements.
- Wide rotor with large screen area.
- Air-cleaned grinding screen.
- Swinging step-cut hammers.
- Non-clogging blower with windswept feed delivery.

The No. 6 hammer mill is designed for fast grinding of all kinds of grain, ear corn, and dry roughage. It has a rotor that is both wide and of big diameter to provide large grinding space for its 30 swinging hammers. This construction, together with a number of special features, assures large capacity with a minimum of power.

Specifications

Power required.....	1 or 2-plow tractor
Rotor speed r.p.m.....	2200-2500
Main drive pulley (Regular)	{Diameter.....4½ in.
	{Face.....8 in.
Diameter of rotor (Hammers extended).....	24 in.
Number of hammers.....	30
Total screen area.....	402 sq. in.
Blower diameter.....	18 in.
Cyclone.....	27¼ in.
Blower pipe outlet, diameter.....	5 in.
Blower pipe inlet (Rectangular).....	7 x 3¼ in.
Width of rotor housing.....	10½ in.
Feed throat {Width.....	10½ in.
	{Height.....10½ in.
Height from ground to top of cyclone {High.....	140 in.
	{Low.....89¾ in.
Width overall (end rotor shaft to blower inlet).....	35 in.
Width overall with cyclone.....	64¾ in.
Height from ground to bottom of swivel spout.....	73½ in.
Length of mill overall including feed hopper.....	59 in.
Floor space required for skids {Low cyclone.....	24 x 30 in.
	{High cyclone.....24 x 43½ in.

Regular Equipment

Main drive pulley, 4½-in. diameter. Two screens, ¼ and ½-in. round hole, unless otherwise specified.



Illust. 1 — No. 6 hammer mill with low cyclone and 2-way bagger.

Special Equipment

Drive pulleys, 5, 6, and 7-in. diameter. Low cyclone with 2-way bagger. High cyclone with loading spout. 8-ft. blower pipe. Grinding plate. Extra screens.

Available Grinding Screens

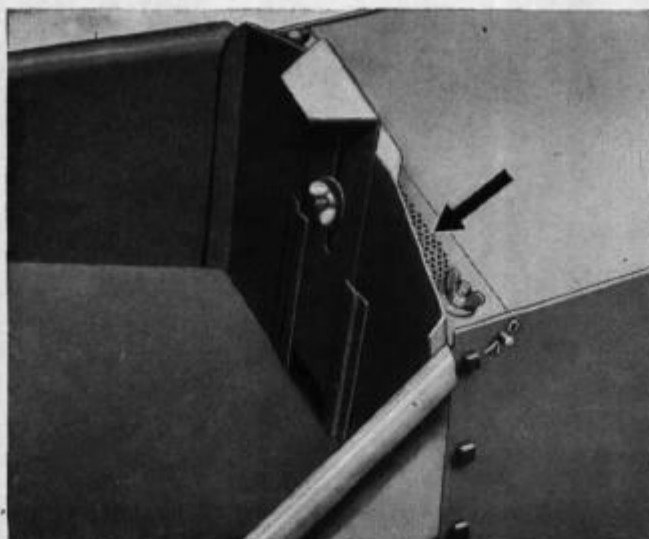
Screens for ear corn; ⅝ and ¾-in. round hole. Screens for shelled corn and oats; ⅜, ⅞, and ½-in. round hole. Screens for wheat, barley, rye, etc.; ¼, ⅝, and ⅜-in. round hole. Other round hole screens: ⅛, ⅞, ⅜, ⅝, ⅞, 1¼, 2¼, and 3⅛-in. Square hole screens, ⅞, 1⅞ and 1⅞-in.

Equipment Combinations and Weights

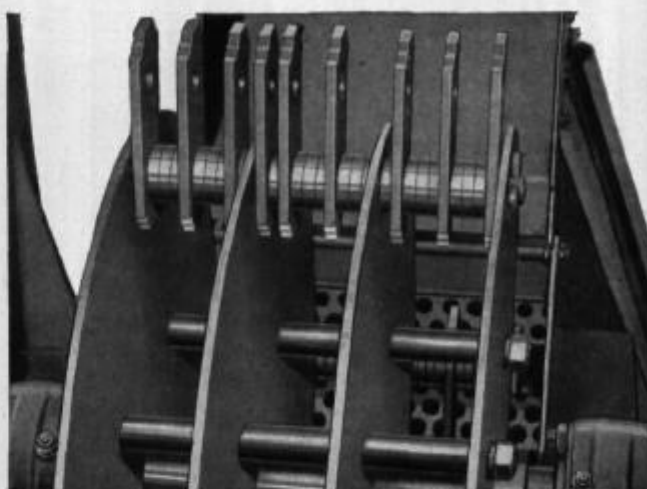
Description	Net Weight (Approximate)
No. 6 Hammer mill, less cyclone.....	484 lb.
No. 6 Hammer mill with low cyclone and two-way bagger.....	568 lb.
No. 6 Hammer mill with high cyclone and wagon loading spout.....	621 lb.

No. 6 Hammer Mill

(Features)



Illust. 1 — The arrow points to the rotor ventilator which helps to keep the grinding screens clean. The adjustable gate for small grain is also shown. This is removed for grinding ear corn and dry roughage.



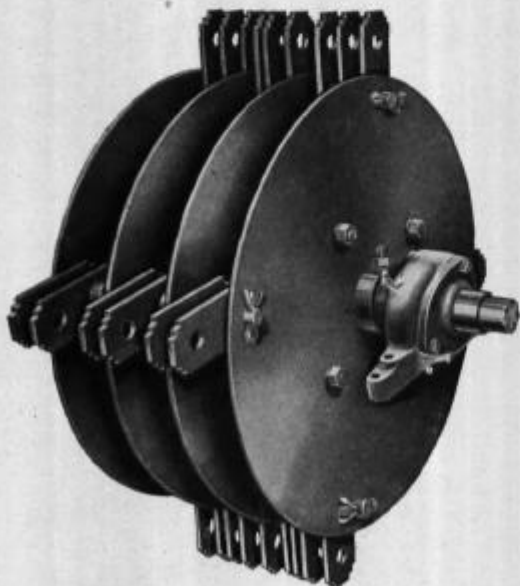
Illust. 3 — The air-cleaned grinding screen has an effective separation area of 402 square inches and makes possible maximum grinding capacity by the large rotor and 30 hammers.

No. 6 Hammer Mill Capacities

(Approximate Pounds Per Hour)

Size of Screen	Oats	Shelled Corn	Ear Corn
1/8 in.	870- 2100	.....	.....
1/4 in.	2522- 5460	4620-8210	1680-4200
3/8 in.	3765- 7080	5040-8540	2100-4530
1/2 in.	6180-13000	5580-8880	3060-4860
3/4 in.	.....	.....	3660-6240

Capacity of mill for grinding barley is approximately the same as for shelled corn. NOTE: The capacities shown above are approximate and will vary according to power applied, climatic conditions, and condition of materials to be ground. The mill should be always operated at recommended speed in order to obtain best results.



Illust. 2 — The wide rotor is of big diameter to provide large capacity. The 30 swinging step-cut hammers are staggered to cover the entire screen area.

Air-Cleaned Grinding Screen

Fast grinding with the No. 6 hammer mill is assisted by rotor ventilation which keeps the grinding screen clean. It assures maximum utilization of the wide rotor and 30 swinging hammers to obtain large grinding capacity. The blower fan blades are of large size and of ample capacity. The housing for the fan is of wear-resistant iron which helps to give the mill exceptionally long life.

Rotor ventilation equalizes pressure within the grinding chamber and obtains quick separation of ground from unground feed. This increases the capacity of the mill because there is no back pressure to cause "floating" of feed above the screen after it has been ground to desired fineness.

Step-Cut Swinging Hammers

Notching of the hammers increases cutting surface and grinding capacity. Being reversible with four cutting surfaces they also have long life. The swinging hammers are easy to remove and reverse because there are no nuts and bolts. There is also greater safety from breakage when hard objects get into the rotor.



Illust. 4 — Detail of vent for wind - swept feed delivery. Open - vent construction prevents stoppage of air through piling up of feed. A strong current of air is always available to keep the feed passage clean.

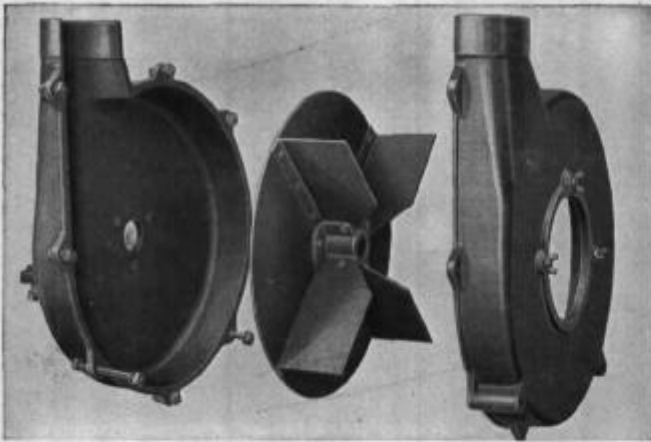


INTERNATIONAL HARVESTER



No. 6 Hammer Mill

(Features)



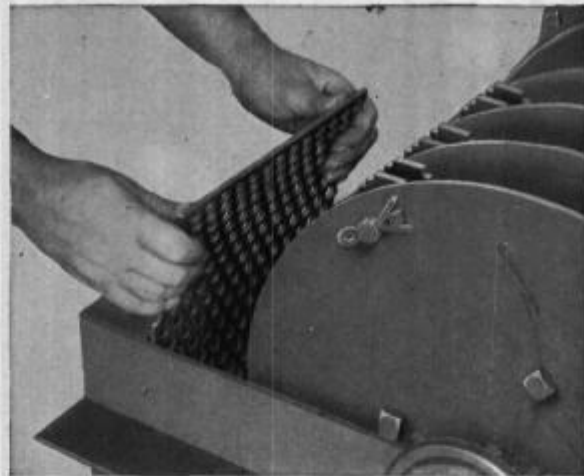
Illust. 1 — The blower fan housing is of wear-resistant grey iron which helps to give the No. 6 mill exceptionally long life.

Wind-Swept Feed Delivery

Ground feed underneath the air-cleaned grinding screen is removed continuously as long as the mill is operating at recommended speed. This avoids clogging or choking. The open-vent construction provides a positive suction force at all times to the large blower fan, thus keeping the passage clean and prevents any piling up of feed. Wind-swept feed delivery makes it possible to utilize the full grinding capacity of the mill and increase its daily output.

The inlet pipe to the blower fan is rectangular in shape with rounded corners to give smooth flow of feed. The wings of the blower fan are heat-treated and riveted to a malleable hub. They provide ample power to handle feed to the full capacity of the mill. A rigid leakproof feed delivery from fan to cyclone prevents waste and makes for less dust while grinding.

Illust. 2 — A grinding plate liner for the rotor housing (with 266-in. area) is available as special equipment. It increases capacity when grinding oats and other small grains.



Illust. 3 — A wide choice of grinding plates is available for the No. 6 hammer mill. It is easy to remove and change the grinding plate when desired.



Illust. 4 — The No. 6 hammer mill can be supplied with high cyclone and swivel loading spout. The delivery point is 73½ inches above the ground.



Nos. 10-C and 10 Hammer Mills

The Nos. 10-C and 10 hammer mills have many features which appeal to dairymen and livestock feeders. In addition to hammers they are equipped with roughage reducing knives for grinding ear corn, grain sorghums (both headed and bundled) and other roughages.

Specifications

Power required.....	2 or 3-plow tractor
Rotor speed, r.p.m.....	1900-2000
Drive pulley (Regular)	Diameter.....5 in.
	Face.....8 in.
Diameter of rotor (Hammers extended).....	24 in.
Width of rotor housing.....	7 1/8 in.
Feed throat.....	Height 6 1/2 in.—Width 9 in.
Number of hammers.....	26
No. 10 hopper, feeding height.....	41 1/2 in.
No. 10-C conveyor, feeding height.....	27 1/2 in.
Screen area for separation.....	180 sq. in.
Screen area for total grinding.....	518 sq. in.
Fan diameter.....	12 in.
Height of elevation.....	40-50 ft.
Force-feed auger diameter.....	5 in.
Pipe size.....	4 in.
Length of cut	15-tooth clutch sprocket (regular).....3 1/2 in.
	11-tooth clutch sprocket (special).....7 1/2 in.
	18-tooth clutch sprocket (special).....5 1/4 in.
Height from ground to top of cyclone	High.....127 in.
	Low.....88 in.
Height to bottom of swivel spout.....	61 in.
Width, No. 10.....	62 in.
Width, No. 10-C.....	71 in.
Length, No. 10.....	71 in.
Length, No. 10-C.....	86 in.
Floor space required by skids.....	31 x 38 in.

The low-height feed conveyor supplied with the No. 10-C saves time and effort when handling ear corn, stalks and other roughages. By removing screens and hammers, the No. 10-C mill may also be used for filling silos. The No. 10 is identical with the No. 10-C except that it has a gravity hopper feed. The entire grinding capacity of these mills is utilized because of an auger conveyor which assures positive delivery of feed to the fan and thus prevents clogging.

Regular Equipment

Main drive pulley, 5-in. diameter. Two screens, 3/8-in. and 3/4-in. round hole. Grinding plate liner.

Illust. 1 — Operators appreciate the convenient low height of the feeding table on the No. 10-C hammer mill. The feed table makes it easier to feed without spilling and there is no grain leakage.



Two roughage reducing knives. Feed hopper for No. 10 mill. Conveyor feeder for No. 10-C mill.

Special Equipment

Low cyclone attachment with two-way bagger. High cyclone attachment with wagon-loading spout. Deflector, distributor, distributor pipe top joint (2-ft.), and distributor pipe sections (3-ft.).

Drive pulleys, 4 1/2, 6, and 7-in. diameter. Knife grinder. 8-ft. blower pipe. Shredder bars. Liner for general coarse grinding. Cyclone elbow, 45 degrees. Hard-face knives. Four-knife equipment. Wide-faced hammers. Conveyor feeder for No. 10 mill. Special drive sprockets, 18 and 11-tooth, for No. 10-C mill.

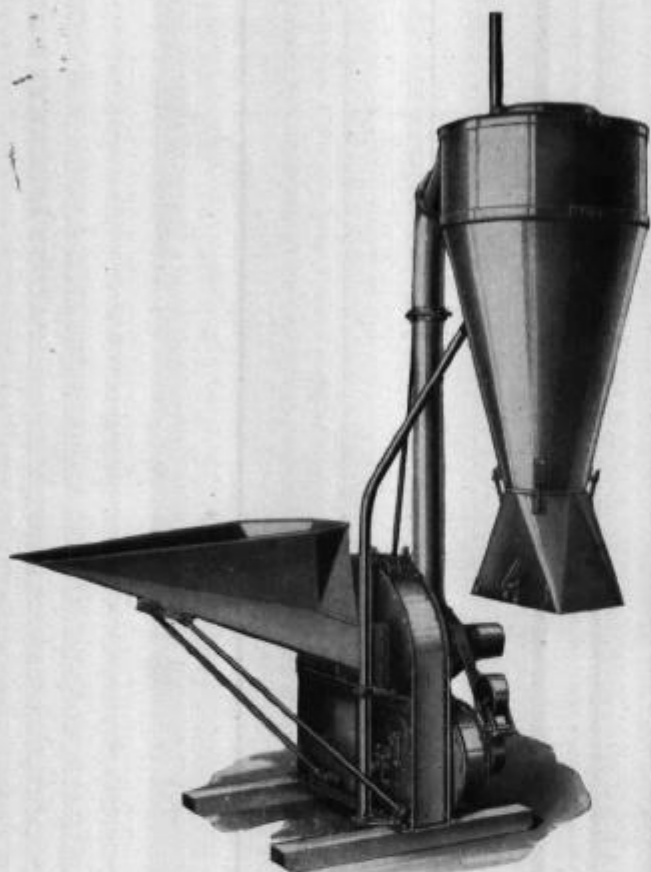
Optional and special grinding screens are available in the following sizes: 3/64, 1/32, 1/16, 3/32, 1/8, 3/16, 1/4, 5/16, 7/16, 5/8, 7/8, 1 1/4 and 2 1/4-inch round hole; and 1/8, 1 1/8 and 1 1/16-in. square hole.

Equipment Combinations and Weights

Description	Net Weight (Approx.)
No. 10 hammer mill, less cyclone.....	495 lb.
No. 10-C hammer mill, less cyclone.....	770 lb.
No. 10 hammer mill with low cyclone and bagger.....	605 lb.
No. 10-C hammer mill with low cyclone and bagger.....	880 lb.
No. 10 hammer mill with high cyclone and swivel spout.....	610 lb.
No. 10-C hammer mill with high cyclone and swivel spout.....	885 lb.

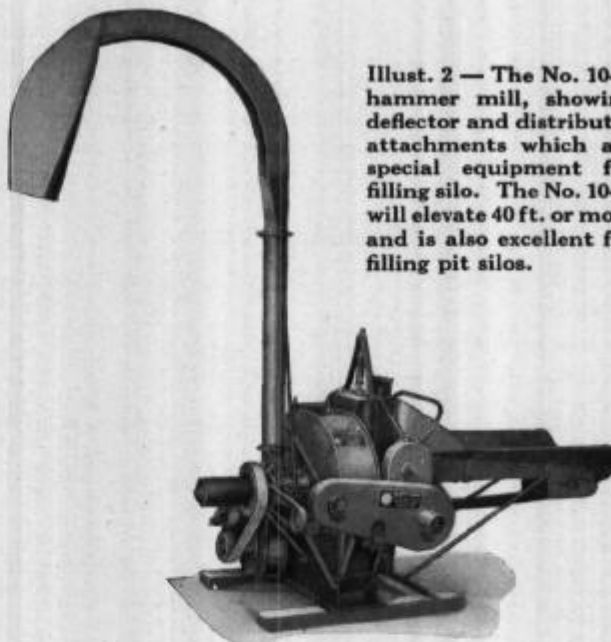


Nos. 10-C and 10 Hammer Mills

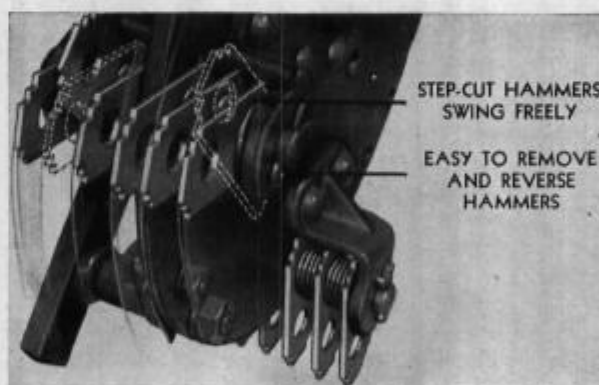


Illust. 1—The No. 10 hammer mill with large-capacity hopper feed, showing low cyclone with 2-way bagger. A baffle of sectional, hinged, retarder fingers helps to regulate the feed of ear corn and prevents ears from kicking back. The amount of grain fed is controlled by an adjustable gate.

- Roughage reducing knives increase capacity.
- Grain-tight feed conveyor on No. 10-C mill.
- Non-clogging blower with auger feed conveyor.
- Elevates feed or ensilage 40-ft. or more.
- Excellent for filling pit silos.



Illust. 2—The No. 10-C hammer mill, showing deflector and distributor attachments which are special equipment for filling silo. The No. 10-C will elevate 40 ft. or more and is also excellent for filling pit silos.



Illust. 3—The rotor of the Nos. 10 and 10-C mills is of steel disk design and has 26 step-cut swinging hammers each with four cutting surfaces.

Nos. 10-C and 10 Hammer Mill Capacities, Pounds Per Hour

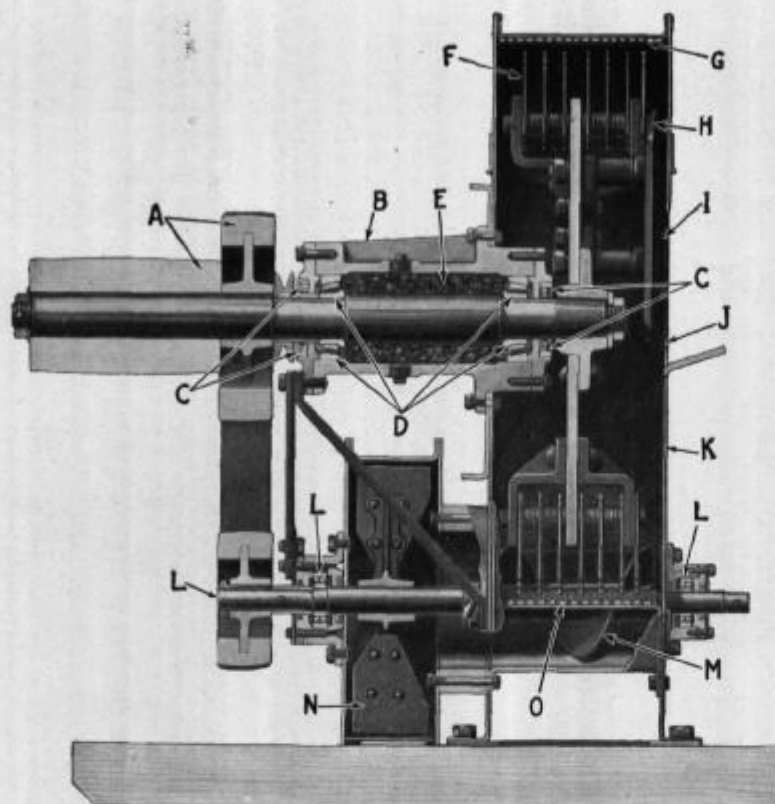
Size Screen	Oats	Wheat	Shelled Corn	Ear Corn	No. 10-C Stalks and Corn	No. 10-C Alfalfa
$\frac{5}{16}$ in.	1,500- 3,000	.....	.....	.....	.....	.....
$\frac{3}{8}$ in.	4,500- 9,800	5,400-15,000	4,700-12,500	.....	.....	.....
$\frac{1}{2}$ in.	4,700-11,500	6,200-15,500	5,000-13,000	.....	.....	.....
$\frac{3}{4}$ in.	.....	.....	.....	2,700- 9,000	2,000-3,500	.....
$1\frac{1}{8}$ in.	.....	.....	.....	3,500-12,000	3,000-5,000	1,000-4,000

Capacity of the mill for grinding barley is approximately the same as for shelled corn.

NOTE: The capacities shown above for grain and roughage are approximate and will vary according to speed of mill, power applied and condition of materials to be ground.



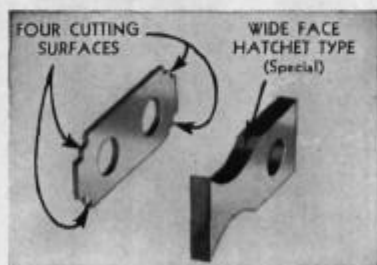
Nos. 10-C and 10 Hammer Mills



- (A) Rockwood drive pulleys reduce belt slippage.
- (B) Oil-tight housing so rotor shaft bearings run in bath of oil.
- (C) Spring-loaded rawhide seals keep oil in and dirt out.
- (D) Tapered roller bearings, for easy running.
- (E) Oil supply—requires very little attention.
- (F) Swinging hammers have four grinding edges—notched to increase grinding surfaces.
- (G) Grinding plate liner increases capacity.
- (H) Cutter knives chop ear corn, sorghums, stalks, etc., as roughage enters mill.
- (I) Side delivery permits either conveyor or hopper feed.
- (J) Side delivery improves feeding when grinding roughage.
- (K) Strong boilerplate safety construction.
- (L) Fan and auger shaft mounted on double row, self-aligning ball bearings.
- (M) Auger to blower fan assures positive feed to fan.
- (N) Spring-steel fan blades resist wear.
- (O) Wide choice of grinding screens—easy to change.

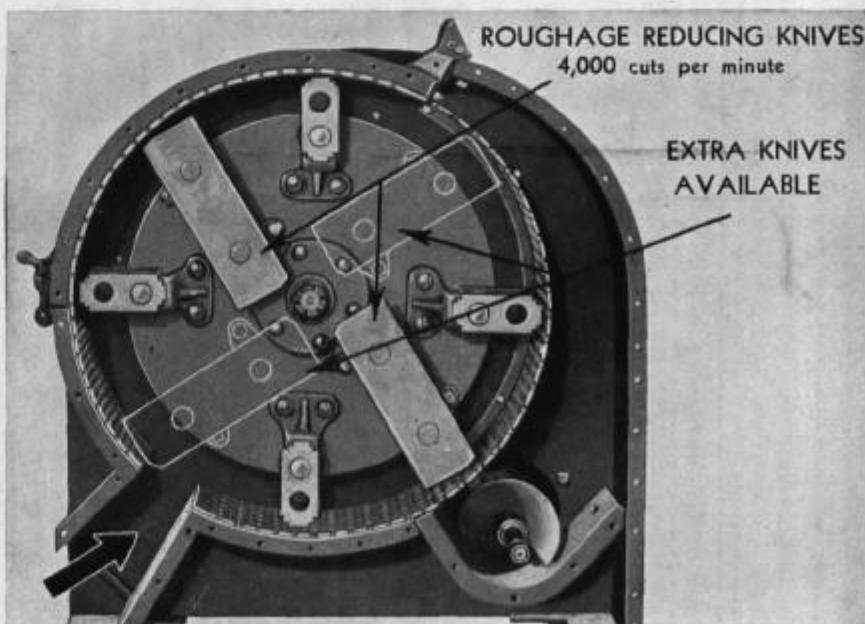
Illust. 1 — Cross-section of Nos. 10 and 10-C mills, showing feed grinding mechanism. These mills are designed for livestock feeders and dairymen, who demand the best in grinding equipment.

Roughage Reducing Knives Assure Large Capacity in Grinding Ear Corn, Sorghums, and Other Dry Roughages

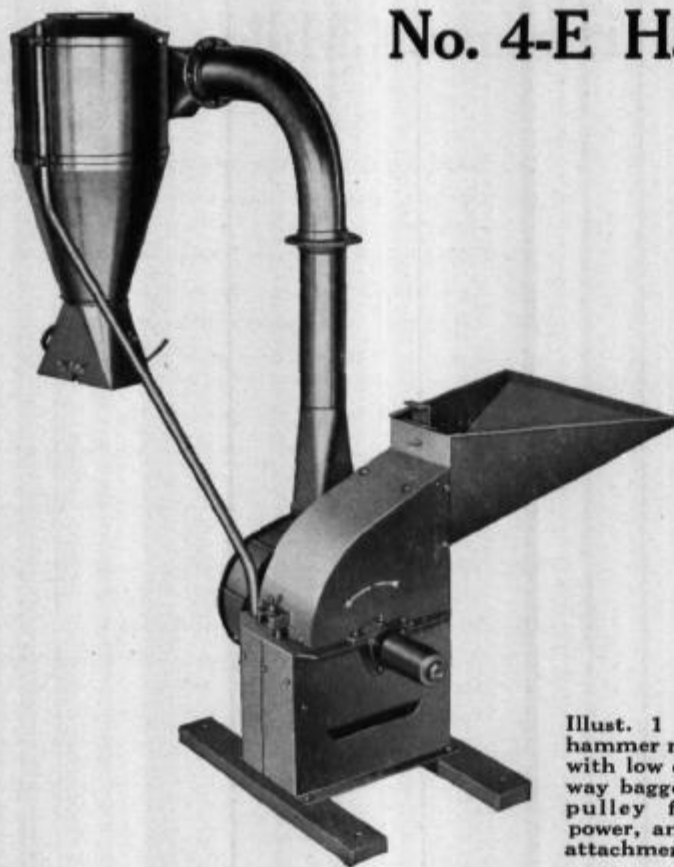


Illust. 2 — The reversible step-cut hammers are regular equipment but special wide-faced undercut hammers are available on special order.

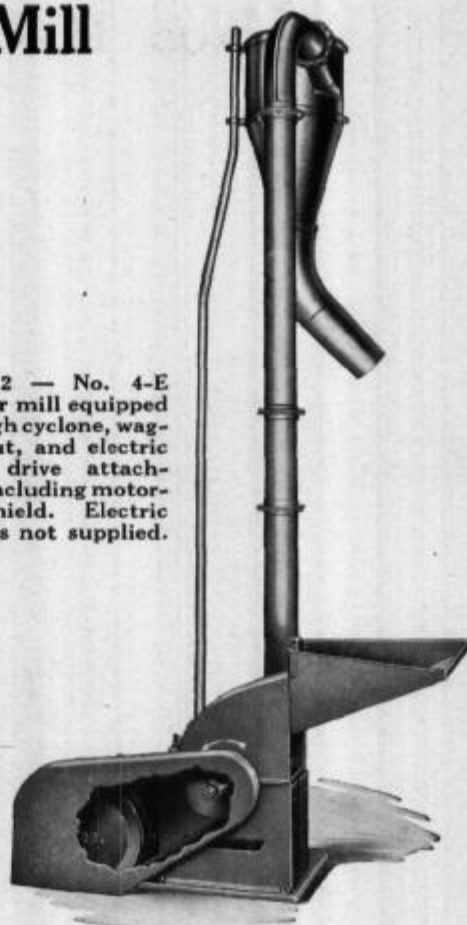
Illust. 3 — Roughage reducing knives increase the capacity of the Nos. 10 and 10-C mills when grinding roughage or ear corn. This reduces the size of material 75 percent before it reaches the hammers. The large arrow in the illustration points to the safety clean-out pocket which collects tramp metal, etc., that might otherwise be forced through the mill.



No. 4-E Hammer Mill



Illust. 1 — No. 4-E hammer mill equipped with low cyclone, two-way bagger, belt drive pulley for tractor power, and wood skid attachment.



Illust. 2 — No. 4-E hammer mill equipped with high cyclone, wagon spout, and electric motor drive attachment, including motor-drive shield. Electric motor is not supplied.

The No. 4-E hammer mill is a small-sized, efficient mill which can be operated by either an electric motor (3, 5, or $7\frac{1}{2}$ h.p.) or by a small tractor having the power of the Farmall Cub. This mill incorporates the time-tested features and stamina of the larger mills. When powered by an electric motor, the No. 4-E hammer mill can be permanently installed in a building with overhead bins, arranged to feed the grain automatically to the gravity feed chute of the mill. All grains, shelled corn, ear corn, and even small amounts of roughage may be handled by this mill.

Specifications

Speed of rotor and blower fan.....	3200 to 3350 r.p.m.
Power required to operate.....	3 to $7\frac{1}{2}$ h.p. electric motor or small tractor such as the Farmall Cub.
Type of rotor.....	3-disk, equipped with swinging-type hammers
Diameter of rotor, hammers extended.....	12 in.
Rotor housing, inside width.....	$7\frac{5}{8}$ in.
Number of hammers.....	20
Size of hammers.....	$2 \times 4\frac{7}{8} \times \frac{3}{4}$ in.
Grinding plate area.....	123 sq. in.
Screen area.....	148 sq. in.
Total grinding area.....	271 sq. in.
Grinding plate size.....	$17\frac{3}{4} \times 6\frac{15}{16}$ in.
Screen size.....	$19\frac{3}{4} \times 7\frac{1}{2}$ in.
Blower pipe inlet dimensions.....	5 in. wide x 2 in. deep
Blower fan.....	1-piece, cast steel. $10\frac{3}{8}$ in. diameter; 5 wings, $3\frac{1}{16}$ in. wide
Floor space required.....	38 in. long, 25 in. wide
Mill with regular equipment.....	132 lbs.
Attachments:	
Low cyclone with two-way bagger.....	35 lbs.
High cyclone with wagon spout.....	59 lbs.
Electric motor drive (less motor).....	45 lbs.
Skid for belt operation.....	7 lbs.
Belt pulley.....	2 lbs.

- Low power requirement.
- Adapted for permanent installations with automatic feed.
- Low initial cost.
- Low operating cost.
- Large capacity for its size.
- Wide rotor with large screen area.
- Swinging, step-cut hammers.
- Non-clogging blower with windswept feed delivery
- Modern design and quality construction.

Capacity

For its size, the capacity of the No. 4-E hammer mill is very high. Approximately 3,500 pounds of shelled corn ($\frac{1}{2}$ -inch screen) may be ground in an hour; 1,700 pounds of oats ($\frac{3}{8}$ -inch screen); 2,900 pounds of ear corn ($\frac{5}{8}$ -inch screen).

Regular Equipment

Gravity feed chute. One screen ($\frac{1}{2}$ -inch, round hole unless otherwise specified). Blower outlet pipe.

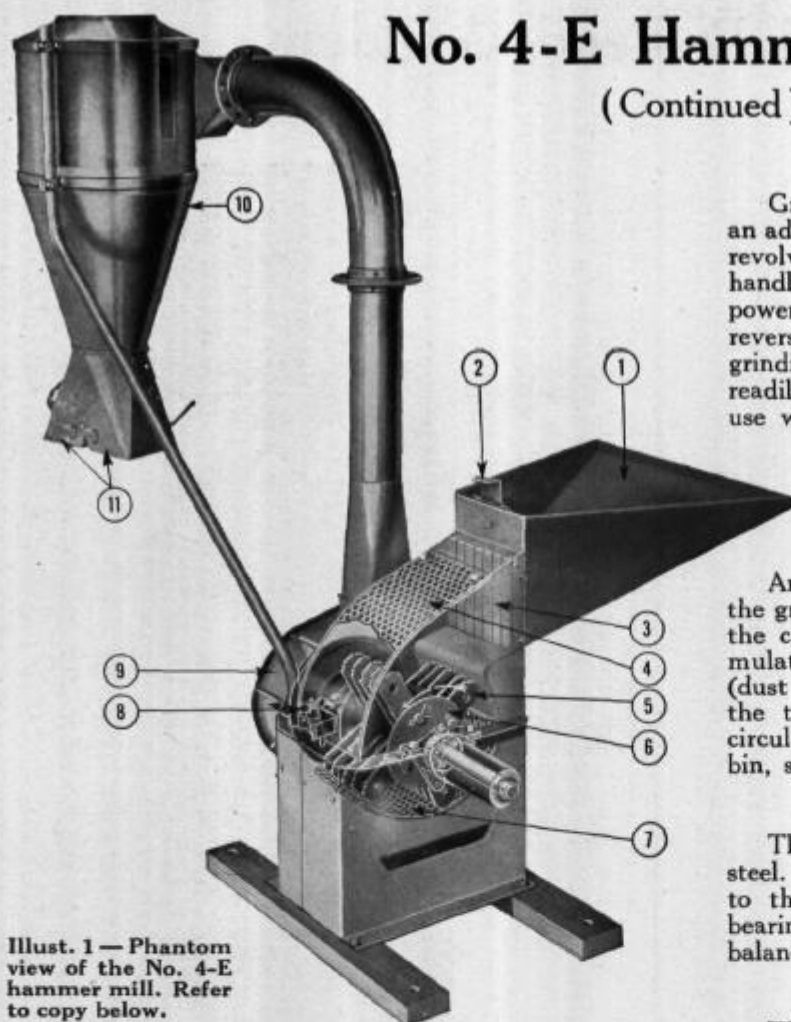
Special Equipment

Low cyclone with two-way bagger. High cyclone with wagon spout. Electric motor drive attachment, including steel base and attaching parts less the motor. Motor drive shield attachment. Skid attachment for use with tractor. Cyclone elbows, 45- or 90-degree, 4-inch diameter. Blower pipe sections, 4-inch diameter in lengths of 12, 39, or 96 inches. Rotor drive pulley: 3 x 5 inch, for tractors with belt speed of 2,600 feet per minute. Rotor drive pulley, $3\frac{5}{8} \times 5$ inch, for tractors with belt speed of 3,100 feet per minute. Screens: $\frac{1}{2}$, $\frac{1}{16}$, $\frac{3}{16}$, $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, and $\frac{1}{8}$ in. round hole type.



No. 4-E Hammer Mill

(Continued)



Illust. 1 — Phantom view of the No. 4-E hammer mill. Refer to copy below.

1. **Gravity feed chute** . . . is of the over-shot type, delivering feed to the mill in the same direction as the rotation of the rotor.
2. **Adjustable feed gate** . . . controls the rate of flow to the hammers.
3. **Hinged baffle plates** . . . prevent ricocheting material from leaving the grinding chamber.
4. **Grinding plate** . . . in the hood greatly increases the grinding area.
5. **Swinging hammers** . . . are notched to increase their cutting area and may be reversed when worn. Possible damage from foreign objects is minimized with this design.
6. **Three-disk rotor** . . . is accurately balanced for smooth running and is mounted on self-aligning ball bearings.
7. **Screen** . . . is readily replaceable with any one of eleven sizes.
8. **Hood latch** . . . holds hood securely.
9. **Blower fan housing** . . . encloses a one-piece five-bladed fan, mounted directly on the rotor shaft.
10. **Cyclone (dust collector)** . . . separates ground feed from air blast, thus preventing dust.
11. **Two-way bagging spout** . . . permits one bag to be filled while the other is being replaced.

Straight Flow Operation

Grain placed in the gravity feed chute, pours through an adjustable gate, which controls the rate of flow to the revolving hammers. The flow of grain, which can be handled, is limited by the type of material and the power available. Twenty swinging hammers of the reversible type are positioned to completely fill the grinding screen as they revolve. The grinding screen is readily replaceable, and there is a choice of 11 sizes for use with different grains and for different degrees of grinding. In addition to the screen, there is a replaceable grinding plate in the hood which increases the total grinding area to a maximum.

Air-Cleaned Grinding Screen

An air blast carries the ground feed from beneath the grinding screen and sweeps it up the blower pipe to the cyclone. Ground feed can not, therefore, accumulate below the screen and clog the mill. The cyclone (dust collector) allows the air to expand and pass out the top while the ground material is directed in a circular motion, finally dropping out the bottom into a bin, sack, or truck.

Simplified, Rugged Construction

The rotor housing is sturdily constructed of 12-gauge steel. The rotor is composed of three steel disks welded to the rotor shaft and mounted on self-aligning ball bearings. The rotor and hammers are accurately balanced, assuring smooth operation.

One-Piece, Cast Blower

The blower fan, mounted on the same shaft as the rotor, is a one-piece, five-bladed, cast unit. It will lift a full load of ground feed to a height of 25 to 35 feet, depending upon the exact number of elbows in the pipe. Pressure-grease fittings permit positive lubrication of the self-aligning ball bearings.

Automatic Operation

The operation of the mill may be made practically automatic. To do this, overhead bins for the grain and for the ground feed should be provided. Grain from the supply bin is allowed to pour into the gravity feed chute of the mill at a controlled rate. Without attention, the mill will grind and elevate the feed into the feed bin. Such automatic operation in which a small mill is run for long periods has been found to be more economical than the use of a large mill for brief periods or custom grinding.

Motor or Belt Drive

The No. 4-E hammer mill can be driven by either a small tractor, such as the Farmall Cub, or a convenient size electric motor (3 to 7½ h.p.).

When the mill is to be driven by a tractor, it is ordered with the appropriate special belt pulley. Thus, when used with the Farmall Cub, a 2⅝ inch diameter pulley is required on the mill to match the 3,114 feet per minute belt speed of the Cub. The wooden skid attachment is used when a tractor drive is employed. For the electric motor drive, a flat steel base is included with the electric drive attachment.



Types C and D Feed Grinders

- Efficient, economical burr-type feed grinders.
- Convenient adjustment for fine, medium, or coarse grinding.
- Rugged steel construction throughout.
- Type D grinder has special features for handling ear corn.
- Revolving knives on Type D feed grinder for grinding corn in the husk.
- Double-faced grinding plates, reversible for long service.
- Both models geared to operate with a minimum of power requirements.

Types C and D feed grinders are designed for the poultry raiser, dairyman and livestock feeder desiring a low cost burr-type mill. Type D feed grinders have special features for handling ear corn as well as shelled corn and small grains. They are also equipped with revolving knives for grinding ear corn in the husk and also have other features for grinding kafir corn, milo maize and other varieties of hard grain. A supplemental bottom is provided for Type D mills as a convenience for grinding shelled corn and small grains. The hopper on the Type C mill is equipped with an inside shut-off to regulate the flow of grain.

Regular Equipment

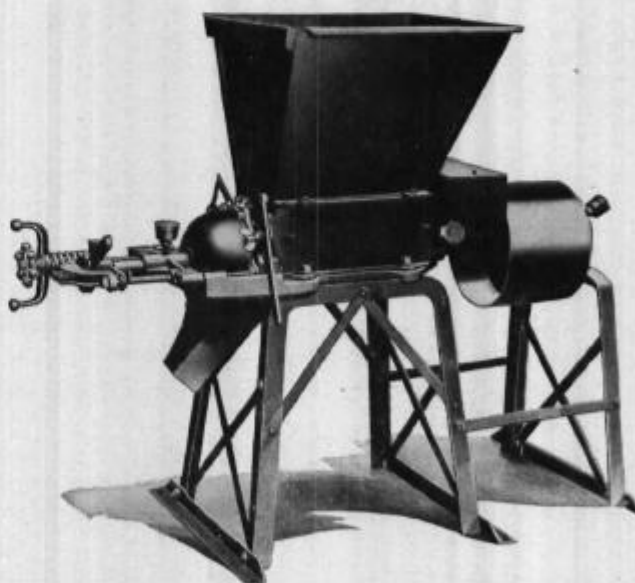
Belt pulley (see specifications). One set of grinding plates for medium grinding (attached to feed grinder). One extra each, grinding plate and breaker core. Lag screws for attaching grinder to the floor.

Special Equipment

Belt pulley in sizes specified (see table on page 418). Wagon elevator with either bagging or wagon spouts. Short bagging elevator. Grinding plates for fine or coarse grinding. Supplemental hopper for Type D feed grinders.



Illust. 1—The type C feed grinder is built with 8-in. grinding plates. It is designed for grinding small grains and shelled corn only. The hopper on the Type C mill is equipped with an inside shut-off to regulate the flow of grain to the grinding mechanism.



Illust. 2—The type D feed grinder is built with 10-in. grinding plates. It is an all-purpose mill designed to grind corn in the husk or on the cob, kafir corn, milo maize and small grains.

Feed Grinder Specifications

GRINDER	Horsepower Required	Grinder R.P.M.*	Bushels Per Hour	Regular Pulley		Width of Belt Recommended	Net Weight (Approx.)
				Diameter	Face		
Type C, 8-in.	6—12	600—1200	18—72	8 in.	8¼ in.	5 to 8 in.	235 lb.
Type D, 10-in.	8—16	520—1000	18—85	12 in.	8¼ in.	6 to 8 in.	415 lb.

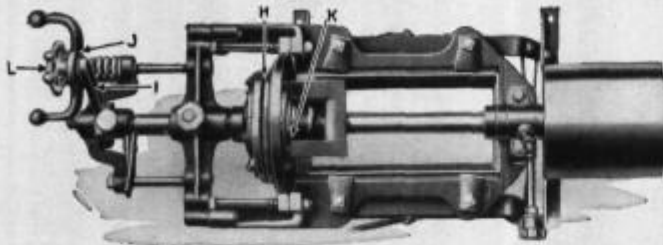
*Grinders should not run above this speed.



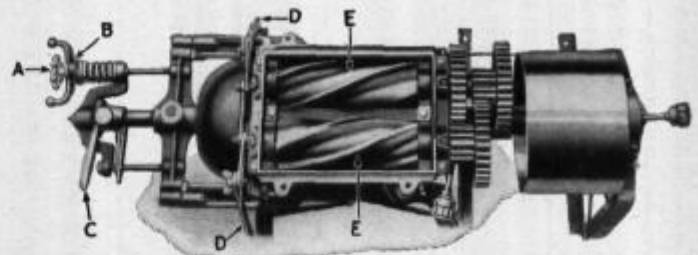
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Types C and D Feed Grinders



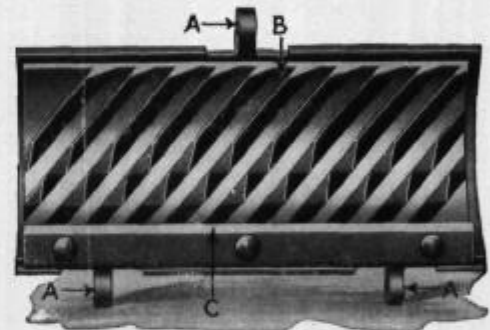
Illust. 1 — Type C grinding mechanism. (H) indicates the grinding plate, (I) plate release lever, (J) plate adjusting crank, (K) feeding spiral, and (L) hand lock nut.



Illust. 4 — Type D grinding mechanism for grinding corn in the husks. (A) indicates hand lock nut; (B) plate adjusting crank; (C) plate release lever; (D) feed-regulating slides; (E) cob-cutting knives.



Illust. 2 — The cob breaker helps to prepare the ear corn for the grinding plates. Illustration shows cob breaker used in Type D mill.



Illust. 5 — Concave and cob knife for Type D grinder. (A) indicates wood break pins; (B) spiral and (C) cob knife.



Illust. 3 — A supplemental hopper can be supplied for the Type D feed grinder. It is used when grinding small grain and ear or shelled corn at the same time.



Illust. 6 — Interior view of hopper showing supplemental bottom (A) which is supplied as regular equipment with Type D feed grinders.



Types C and D Feed Grinders



Illust. 1 — Detailed view of bagging spout for short elevator showing bag clamps (A) and lever (B) for directing grain to either bag.



Illust. 3 — The short bagging elevator can be supplied as special equipment for both feed grinders.

Belt Pulleys

Type C Grinder	Type D Grinder
8-inch Diameter	10-inch Diameter
*8 in.	8 in.
10 in.	10 in.
12 in.	*12 in.
14 in.	14 in.
16 in.	16 in.
18 in.	18 in.
	20 in.

Belt pulleys for 8 and 10-in. feed grinders have 8 1/4 in. face.

*Belt pulley regularly supplied with feed grinder.



Illust. 4—The double-faced grinding plates are reversible and interchangeable. Special plates for coarse or extra fine grinding are available.



Illust. 2 — (Above) A convenient permanent type installation of the feed grinder which permits feeding directly from an overhead bin. The elevator makes it possible to deliver the feed either to an adjacent bin or load it into a wagon for mixing with other feed or storing it elsewhere. The feed grinder is securely bolted to the floor so that proper belt tension can be maintained.

Illust. 5— (Right) Wagon elevator with bagging spout can be supplied as special equipment for both feed grinders. A wagon spout can be supplied in place of bagging spout.



No. 30 Cylinder Corn Sheller

The popular-size No. 30 cylinder corn sheller is made for the corn grower who has a medium acreage and wishes to do his own shelling at minimum cost. It has a capacity of 100 to 150 bushels of husked corn per hour and yet can be operated by any 1-plow tractor, gasoline engine, or a motor delivering from 5 to 10 horsepower.

Simple design and safe, sturdy construction distinguish this sheller, which contains many convenient features that are not generally found in low-cost cylinder corn shellers. It can be equipped to meet the needs of the operator who wishes to do a clean job of shelling either tough or dry corn to sell at the elevator or for the livestock feeder who wishes to shell just enough at a time to meet his immediate feeding requirements.

Regular Equipment

Drive pulley, 14-in diameter, 6-in. face.

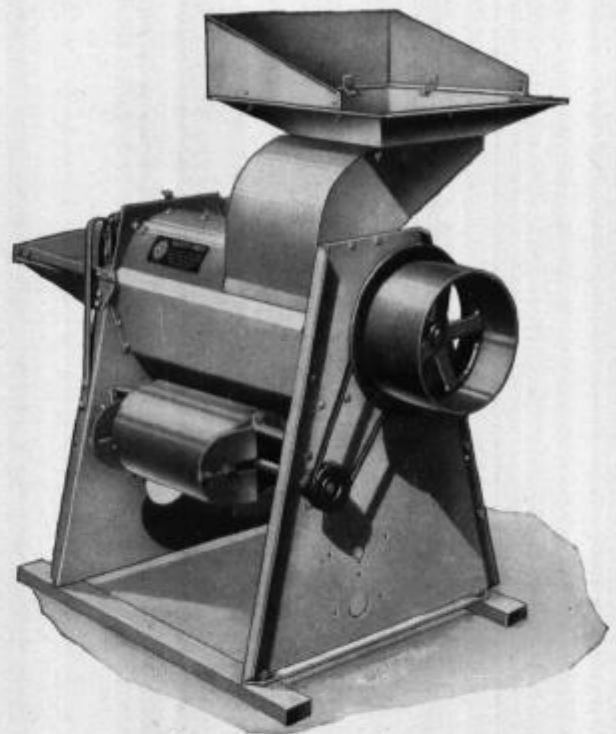
Special Equipment

Drive pulleys, 10, 12, and 16-in. diameter.

Adjustable hopper extension. Cleaning fan. Wagon-box shelled corn elevator and bagging shelled corn elevator. Cob stacker. Long corn thrower. Short corn thrower with bagger.

Specifications

Capacity, bushels per hour.....	100 to 150
Power required.....	5 to 10 hp.
Speed, r.p.m.....	675-750
Height to top of hopper.....	48 in.
Overall length.....	58½ in.
Overall width.....	38 in.
Length of bagging elevator.....	61 in.
Length of wagon box elevator.....	90 in.
Length of cob stacker.....	96 in.
Length of long corn thrower.....	120 in.
Approx. net weight of sheller less attachments.....	285 lb.



Illust. 1 — No. 30 cylinder corn sheller with cleaning fan and hopper extension attachments. The hopper extension is adjustable for feeding from four positions. This prevents waste and makes it easier to feed the sheller.

- Simple design sturdy construction.
- Overshot feed eliminates kickbacks and promotes clean, fast shelling.
- Wide choice of equipment combinations.
- Convenient operating adjustments.
- Sturdy cob shaker construction for long life.
- Thrifty panel enclosure to collect shelled corn.
- Capable of shelling 100 to 150 bushels husked corn per hour.
- Operated by a 1-plow tractor, gasoline engine or 5 to 10 horsepower motor.

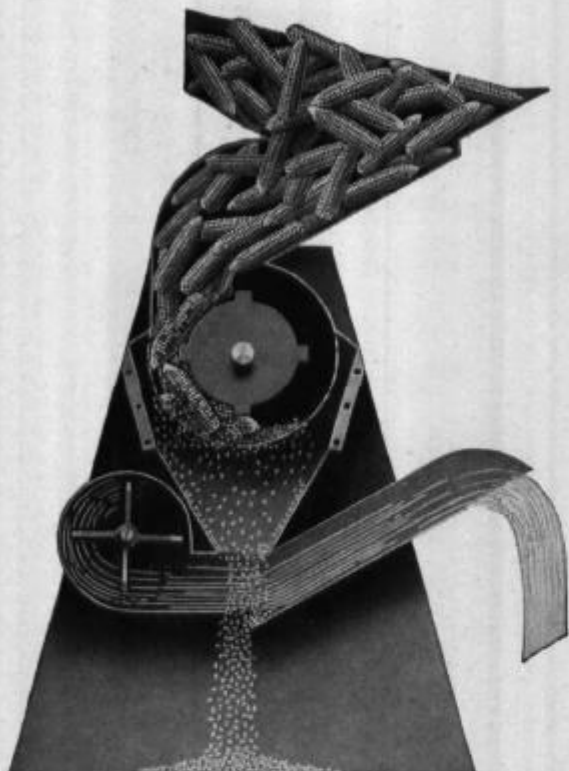
Equipment Combinations and Weights

Description	Net Weight (Approx.)
No. 30 cylinder sheller, less attachments.....	299 lb.
No. 30 cylinder sheller with hopper extension and cleaning fan.....	337 lb.
No. 30 cylinder sheller with hopper extension, cleaning fan and 10-ft. corn thrower	472 lb.
No. 30 cylinder sheller with hopper extension, cleaning fan, wagon box elevator and cob stacker.....	547 lb.



No. 30 Cylinder Corn Sheller

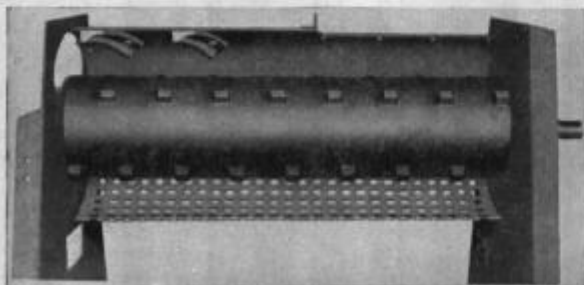
(Features)



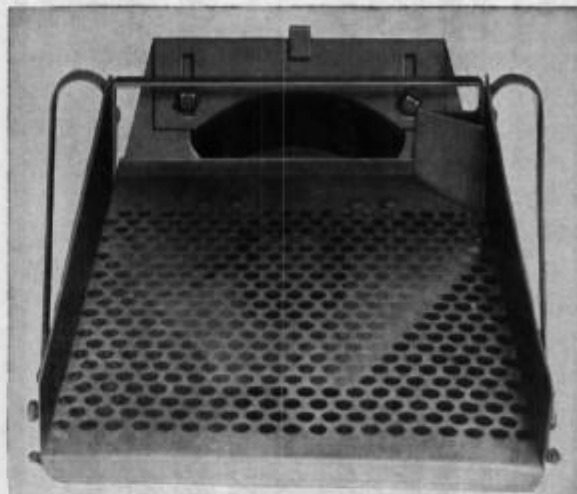
Illust. 1 — The overshot feed assures safe, fast shelling without kick backs because the ears of corn strike the cylinder in line of feed. The blast outlet for the cleaning fan directs all dirt downward for the comfort of the operator.

Corn Travels Downward in Line of Feed

The shape and location of the hoppers allows the ears of corn to enter the shelling cage, moving in the same direction as the cylinder is turning, so that the cylinder pulls them in. This promotes safe, clean shelling and greatly increases capacity. There is no danger of kickbacks, or flying ears, making it easier to feed the No. 30 sheller because the operator can safely stand up close while shoveling ears of corn into the hopper.



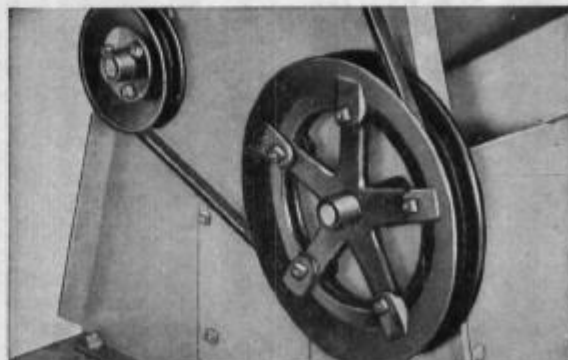
Illust. 2 — The two husk shoes or spiral ribs, keep the ears moving along when the corn is dry and easy to shell. One or both may be removed when shelling conditions are unfavorable. Ample spacing allows small stones to pass through without damaging the shelling mechanism.



Illust. 3 — When corn is tough and further adjustment is needed after both husk shoes have been removed, the cob outlet door can be lowered to make a smaller opening. This opening can also be reduced for shelling soft corn, small ears, sweet corn, or popcorn.

One-Piece Cylinder

The heavy, one-piece cylinder has lugs placed spirally to advance the corn through the shelling mechanism and thus increase capacity. The lugs are assisted by two husk shoes, or spiral ribs, that keep the ears moving fast when the corn is dry and easy to shell. The shoes are mounted at the top of the shelling cage near the cob outlet and may be removed if the corn is tough and does not shell easily. Further adjustment, to obtain clean shelling, is made possible by the cob outlet door that is lowered to make a smaller opening for shelling soft corn, small ears, sweet corn or popcorn. When dry corn is being shelled the cob outlet door is raised to prevent the cobs from being broken into small pieces. These adjustments provide for greater flexibility of operation as compared to many other shellers of this type.

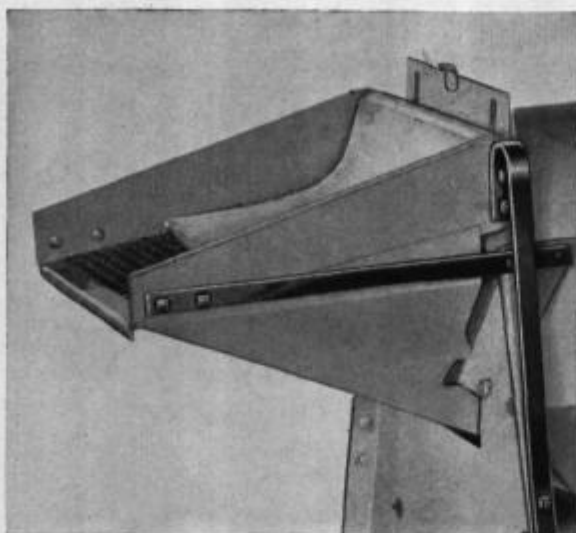


Illust. 4 — The adjustable pitch sheaves on the drive attachments provide the correct amount of tension without the use of idlers. High-quality V-belts provide smooth and quiet operation.



No. 30 Cylinder Corn Sheller

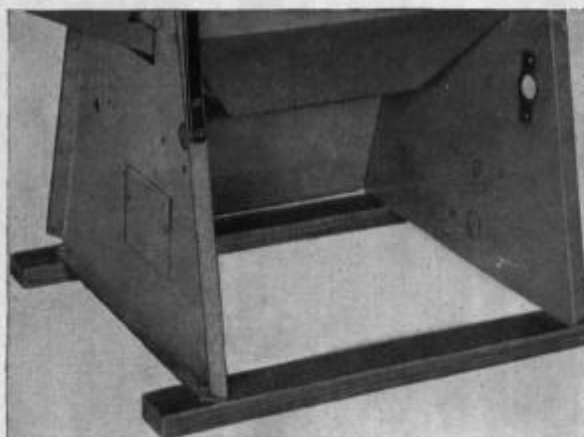
(Features and Equipment)



Illust. 1 — Heavy steel spring construction of the cob shaker assures long life and avoids early replacement cost. It provides positive agitation that gets all of the shelled corn through the screen and avoids corn loss.

Sturdy Cob Shaker

An important feature of the No. 30 sheller that assures longer life, clean corn, and increased capacity is the sturdy construction of the cob shaker or separating sieve. Strong, high-carbon steel springs assure positive action of the shaker even after long periods of service. All the shelled corn is shaken through the screen—no corn is carried over and lost in the cob pile.



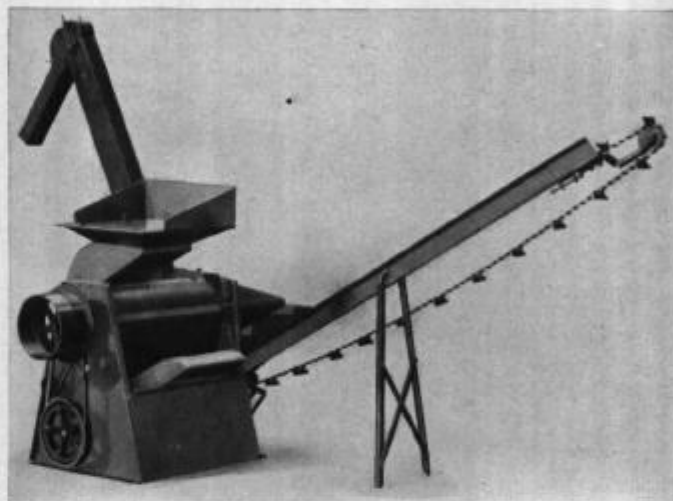
Illust. 2 — The side and end panels make an enclosure which prevents waste and confines the shelled corn for convenience in shoveling. The panels also reinforce the sheller to keep shafts in alignment.

Thrifty Panel Enclosure

If the elevator or corn thrower attachments are not used the shelled corn passes from the cage into an enclosure provided by panels at the rear and sides of the machine. This permits convenient shoveling for removal and also prevents mixing of the shelled corn with cobs or ear corn. If desired a bushel basket may be placed under the sheller to catch the shelled corn.



Illust. 3 — The cleaning fan attachment blows a strong blast of air through the shelled corn, removing small pieces of cob and foreign materials. Adjustable dampers are provided for regulating the air blast.



Illust. 4 — No. 30 sheller shown with adjustable hopper extension, cleaning fan, cob stacker, and wagon box elevator which are supplied special. The hopper extension is adjustable for feeding in four positions. This prevents waste and makes it easier to feed the sheller. The cob stacker is adjustable for height of delivery.



Illust. 5 — Rear view of No. 30 corn sheller, showing separating cob sieve, also cob stacker and wagon elevator attachments. Either attachment is available on special order and may be used separately if desired. For one-man operation the No. 30 cylinder sheller offers exceptional value.



No. 30 Cylinder Corn Sheller

(Attachments)



Illust. 1 — A convenient bagging elevator is available on special order for the No. 30 cylinder corn sheller.



Illust. 3 — The corn thrower head has inside baffles so that the corn is discharged in an even, compact flow.

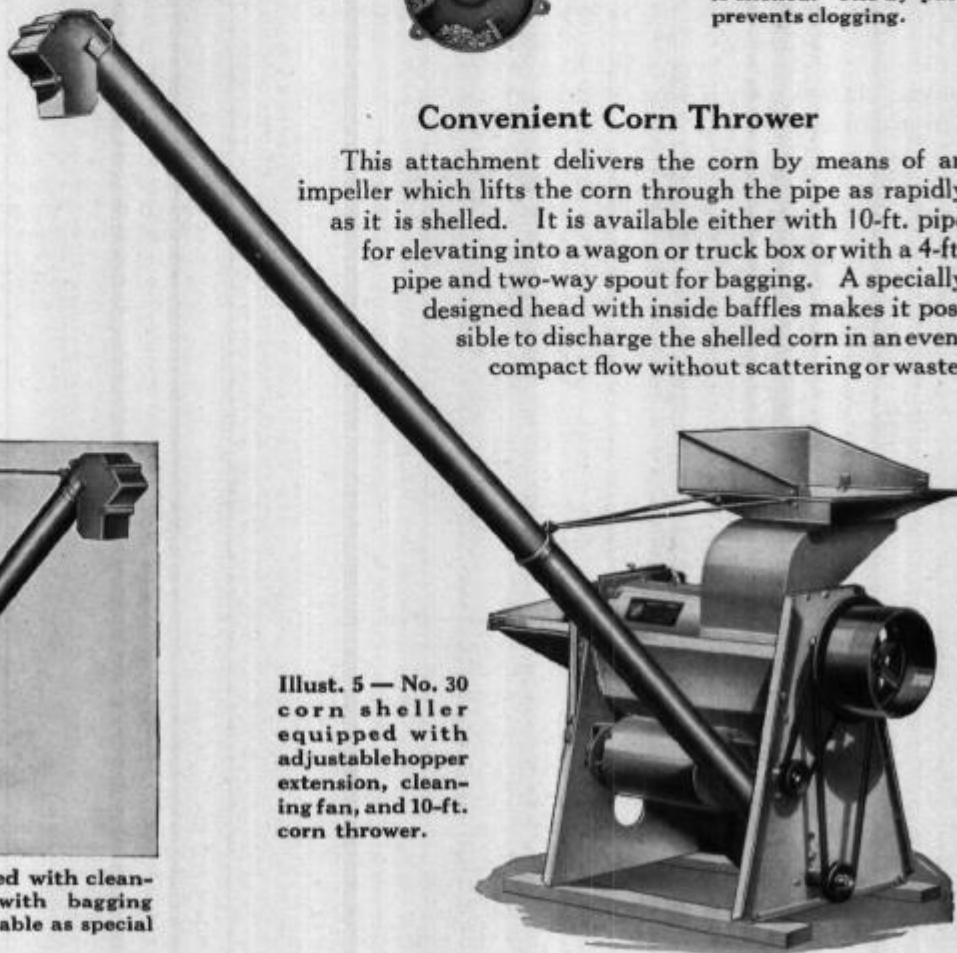


Illust. 4 — The impeller lifts the corn through the pipe as rapidly as it is shelled. The by-pass prevents clogging.

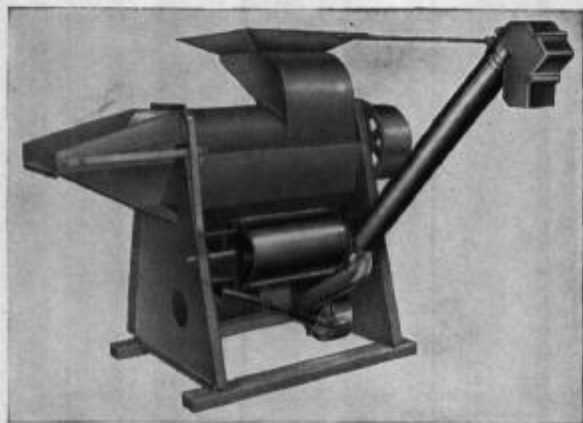
Shelled Corn Elevators and Cob Stacker

A choice of wagon box elevator or bagging elevator is available for delivery of the shelled corn. A force-feed auger, mounted on the shaft that operates the elevator, takes the corn away as fast as it is shelled.

The cob stacker attachment is one of the best time and labor-savers on the shelling job. The cob stacker is adjustable for height of delivery and operates from a spur gear.



Illust. 5 — No. 30 corn sheller equipped with adjustable hopper extension, cleaning fan, and 10-ft. corn thrower.



Illust. 2 — The No. 30 sheller, equipped with cleaning fan and short corn thrower with bagging spouts. These attachments are available as special equipment.



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One Hole Spring-Type Sheller

The spring-type, one-hole corn sheller is an easy-turning machine that can be operated either by hand or with electric motor or small engine. Because it shells without breaking the kernels and can be obtained with a built-in cleaning fan it is especially suitable for shelling corn for seed as well as for feed in small quantities. A seed-corn tipper is regular equipment. The ratchet-type hand crank provides both convenience and safety.

Open gear and pinion teeth allow kernels of corn to pass on through the machine without being crushed. Wide spaces between the stripper wheel teeth also prevent the crushing of kernels and permit small stones to pass through without injuring the machine.

Regular Equipment

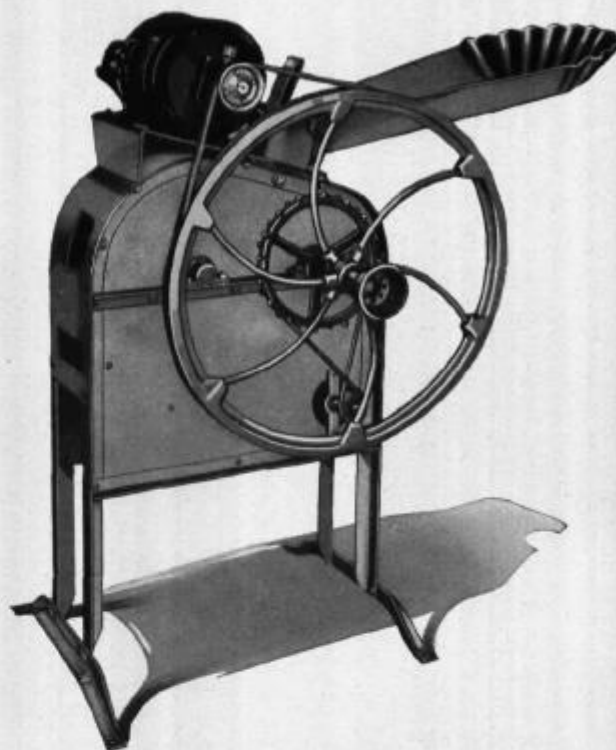
Seed corn tipper. Feed table or basket holder (optional). Ratchet-type crank.

Special Equipment

Cleaning fan bracket and grooved flywheel (24½-in. diameter) for electric motor operation. Belt pulley, 8-in. diameter and 3-in. face. Popcorn shelling parts.



Illust. 2 — The one-hole, all-steel sheller regularly equipped with ratchet-type hand crank. The sheller is available with or without built-in cleaning fan.



Illust. 1 — One-hole corn sheller shown equipped with special motor bracket and grooved flywheel for operation with a small electric motor. A pulley speed of 165 r.p.m. is recommended.

- Shells corn without breaking kernels.
- Ratchet-type handle for safety.
- Open gear and pinion teeth allow kernels to drop through.
- All gears and pinions are separate castings—renewals at low cost.
- Driving parts available for either motor or engine operation.

Equipment Combinations and Weights

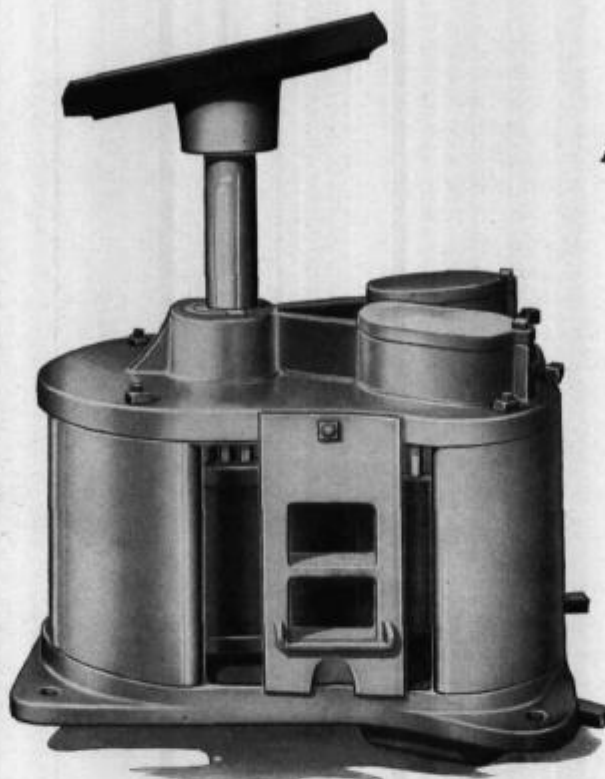
Description	Net Weight (Approx.)
1-hole corn sheller, less fan	120 lb.
1-hole corn sheller with fan	130 lb.
1-hole corn sheller with fan and electric power drive	125 lb.
1-hole corn sheller with fan and belt pulley	137 lb.



Chattanooga Cane Mills

Three-Roll
Vertical

Animal-Power



Illust. 1 — Chattanooga No. 112 three-roll, animal-power cane mill. Notice the heavy construction throughout.

Strong, Dependable Mills

The Chattanooga line of cane mills is designed for those growers who require strong, dependable, well-constructed mills of medium capacities and moderate cost, giving the maximum of juice extraction. All of these mills are quality-built throughout and have the essential weight and strength necessary for grinding cane efficiently.

The Nos. 111, 112, 113, and 114 Chattanooga cane mills are suitable for grinding sorghum and light to medium sugar cane. They are exceptionally light-running mills, correctly proportioned and finely finished. The excellent design of these mills enables cane growers to secure the highest extraction and the greatest profit from their cane.

High Extraction

Chattanooga animal-power cane mills give unusually high juice extraction, for mills of their type. This is due to their rugged construction and design, which permits adjusting and maintaining the rolls at the desired distance apart to obtain the most effective results.

Steel set screws, readily adjustable from the outside of the mill, regulate the pressure. They will not give way nor burr at the ends. Each of these mills is equipped with fluted feed roll to aid in drawing in the cane.

Regular Equipment

Feed box. Wrench. Sloping lever cap. Fluted feed roll.

Special Equipment

Cast iron staves. Angle lever cap.

Specifications

Mill Number Fluted Feed Roll	Number of Rolls	Power Required To Operate	Size Large Roll		Size Small Rolls		Capacity Juice Per Hour	Capacity Tons of Cane Per 12 Hours	Net Weight
			Diameter	Length	Diameter	Length			
111	3	1-Horse.....	10 in.	5 in.	5 in.	5 in.	30-45 gal.	2-3	406 lb.
112	3	1-Horse, heavy.....	12 in.	6 in.	6 in.	6 in.	40-55 gal.	3-4	571 lb.
113	3	2-Horse.....	14 in.	7 in.	7 in.	7 in.	50-70 gal.	4-5	873 lb.
114	3	2-Horse, heavy.....	16 in.	8 in.	8 in.	8 in.	75-95 gal.	5-7	1,145 lb.

All weights and measurements are approximate.

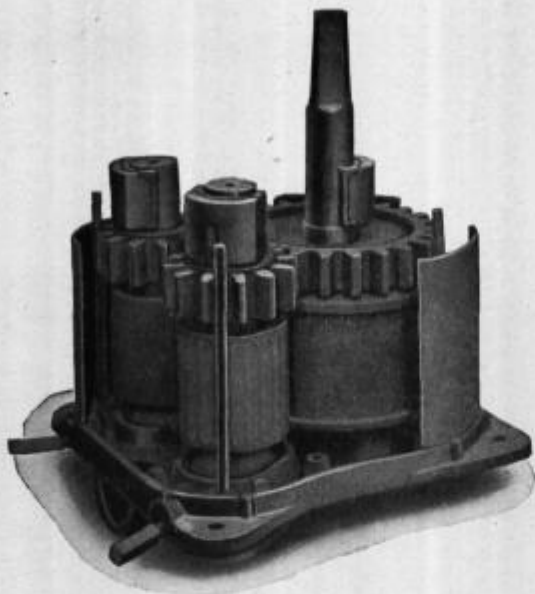


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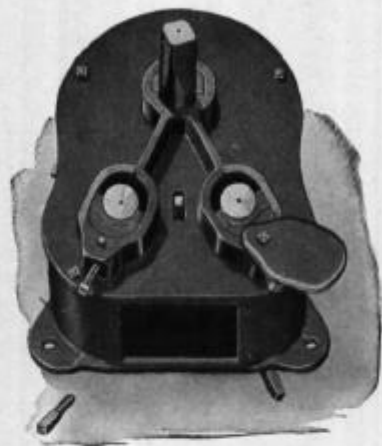


Chattanooga Cane Mills

(Continued)



Illust. 1 — View of the 3-roll, fluted-feed cane mill with top and part of sides removed to show heavy gearing and rolls. The front feed roll has vertical grooves that aid in drawing in the cane.



Illust. 3 — Top view of the 3-roll cane mill with lever cap and one of the bearing caps removed. Note the construction of the bearings with their separate brass bushings which make the mill run smoothly and take the wear off the shafts.

Rolls

All rolls are made of the finest cast iron free from flaws of any kind. They are securely keyed to steel shafts. The main roll has flanges on both ends which project over the small rolls and keep the cane traveling straight through the mill.

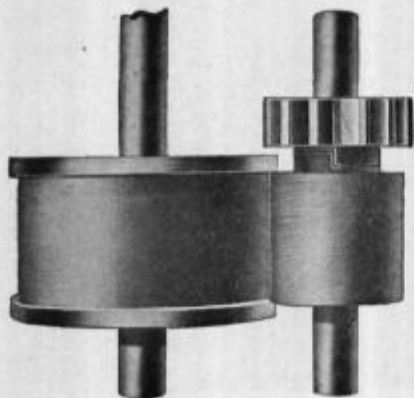
Bearings

The shaft bearings have separate brass bushings which can be economically replaced. Upper bearings

are protected by bearing caps. The lower bearings are lubricated by the excess oil which flows from the upper bearings down the channels to the lower oil boxes.

Gears

The gears are cast separately from the rolls, making it possible to replace them at little cost. Rolls and gears are connected by solid clutches. The bottom plate is made with high edges to prevent juice from wasting or getting into the oil boxes.



Illust. 2 — Main roll and one of the small rolls. The flanges on the main roll project over the small roll. Note also the separate gear and solid clutch.



Illust. 4 — The bottom plate has a high wall around the outer edge and around the bearings. This prevents juice from wasting or getting into the oil boxes.





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SPREADERS AND FERTILIZING EQUIPMENT

Section 15

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FERTILIZING EQUIPMENT

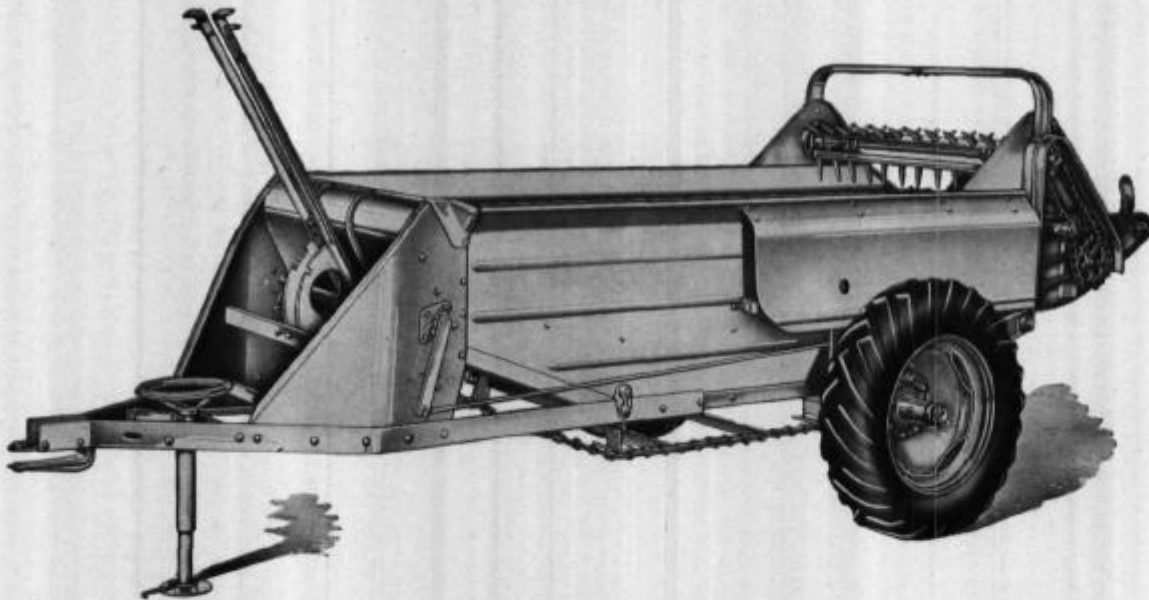
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*For other fertilizing equipment and attachments refer to Plows,
Middlebusters and Listers, Grain Drills, Planters, and Cultivators.*



No. 200-F Tractor Spreader

(For Fluid Manure)



Illust. 1 — No. 200-F tractor spreader regularly equipped with 7.50 x 20 pneumatic tires. Lifting jack is special equipment.

The No. 200-F tractor spreader is a big-capacity, ground-driven manure spreader especially designed to haul and spread *both the solid and fluid portions* of the manure. Its trailer-type design and easy loading height make it particularly useful for everyday spreading.

This big manure spreader will haul up to 75 bushels of manure, depending upon its liquid content. The flared sides and sloping bottom provide for capacity loading with a power loader or by hand.

The all-steel bottom slopes down from the two ends, toward the center, forming a sump for holding the liquid manure. This sump is emptied of fluid manure, both by the well-shielded apron that drags the semi-liquid manure to the back where it is spread by the beaters and widespread, and from the sump outlet at the lowest level of the sump. This outlet also assures drainage of the liquid from the spreader when it is exposed to rain and snow.

Seams of the No. 200-F tractor spreader are sealed with an acid-resistant plastic. The bottom is reinforced with channel and angle steel braces. Chains and gears are shielded from falling litter and freezing manure. The shields also protect the operator.

- Increases crop yield by better utilization of manure.
- Spreads fluid manure without losses from barn to field.
- Larger capacity and easier loading with flared sides.
- Extra-strong hopper bottom for loading from litter carrier or mechanical loader.
- Sump outlet assures complete drainage of the hopper.

Regular Equipment

Pneumatic tires (7.50 x 20). Shields. Widespread. Malleable clevis.

Special Equipment

Lifting jack.

Specifications

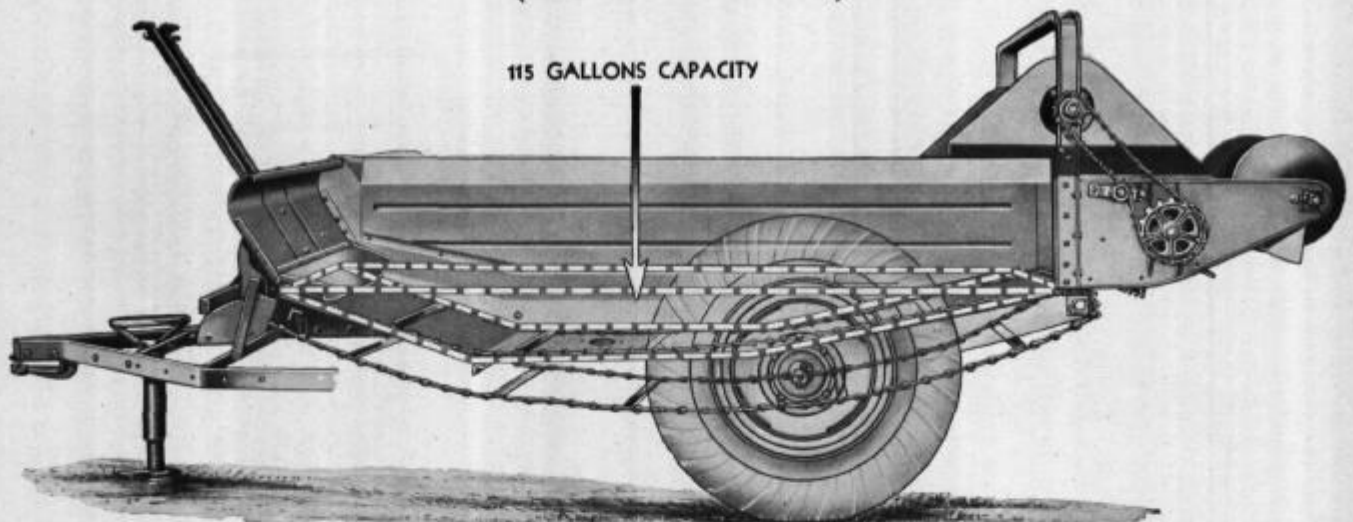
Length of hopper.....	110 in.
Capacity of hopper.....	75 bu.
Ground clearance—drive sprocket	6½ in.
Upper beater, size	12 in.
Lower beater, size	18 in.
Ratio beater to ground wheel (revolutions).....	5-1
Diameter of wide spread	16¾ in.
Ratio—widespread to ground wheel (revolutions).....	18.3-1
Overall length.....	15 ft. 6 in.
Tire size.....	7.50x20
Approximate weight.....	1547 lb.

Notch in feed-lever quadrant	Loads per acre
1st.....	6
2nd.....	12
3rd.....	18
4th.....	24
Width of doorway required.....	6 ft. 6 in.
Wheel tread (center to center).....	65½ in.
Height to top of box from ground.....	45 in.
Width of hopper, front.....	41 in.
Width of hopper, rear.....	42¾ in.
Height from top of flared side to bottom of sump.....	27¼ in.



No. 200-F Tractor Spreader

(For Fluid Manure)



Illust. 1 — The No. 200-F tractor spreader has a liquid-tight hopper bottom that provides a sump with a capacity of 115 gallons. In this illustration the left-side panel has been removed and the left wheel is in phantom to show the hopper bottom and feed apron arrangement. The rollers which hold the feed apron in position are well protected by shields.



Illust. 2 — The bottom of the hopper slopes toward the center to form a sump which holds the liquid manure. The sump outlet provides complete drainage.



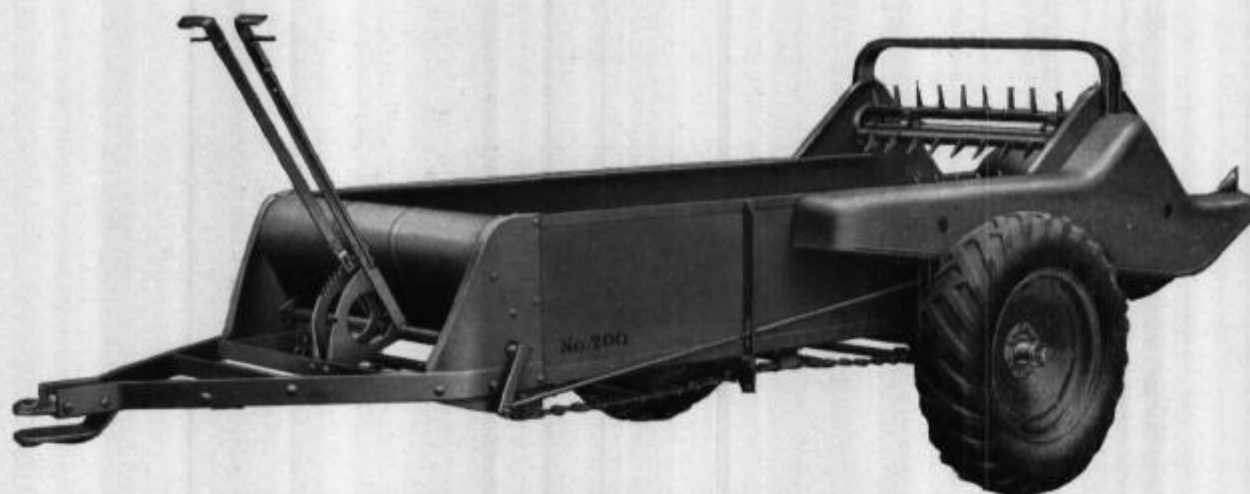
Illust. 3 — Positive control of the roller chain drive is assured by means of a chain guide on the raising yoke and an adjustable rod aligning the chain and sprocket.



Illust. 4 — The No. 200-F answers the requirements of dairy farmers and livestock owners who require a spreader of the most rugged type of construction and who desire to obtain maximum utilization of all the manure.



Nos. 200 and 100 Tractor Spreaders



Illust. 1 — The No. 200 tractor spreader is built for herds larger than 15 head. Pneumatic-tires are regular equipment.

- Built for tractor operation.
- Easy-lift loading.
- Spinning action widespread.
- Roller chain main drive.
- True-alignment construction.

The Nos. 200 and 100 tractor spreaders are high-capacity spreaders. The No. 200 tractor spreader hauls 65 bushels; it is big enough to handle the manure from herds of 15 head and up. The No. 100 tractor spreader will handle the manure from small to average-size herds. It will haul 40 bushels of material.

Both spreaders are two-wheel, trailer-type machines,

sturdily built throughout for tractor operation. The flexibility of the spreaders is increased by the quick-detachable hitch, and the special lifting jack for the No. 200.

Maximum traction is maintained at all times because most of the weight of the load is carried on the rear wheels. Just enough weight is placed on the tractor wheels for traction.

The sides of the spreader are all steel, especially reinforced with beads and angles.

Regular Equipment

Pneumatic tires. Shield. Malleable clevis. Widespread.

Special Equipment

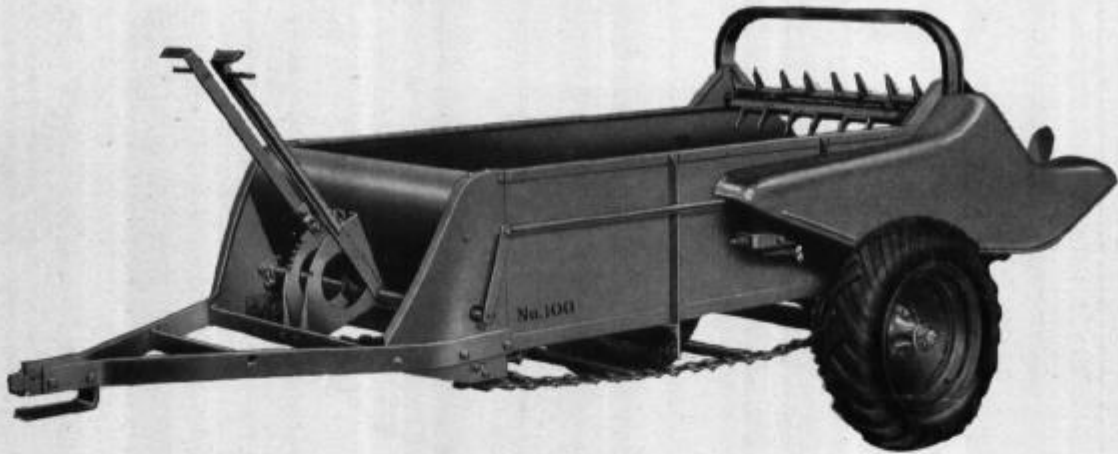
Endgate. Rear pan attachment. Steel wheels. Lifting jack (No. 200).

Specifications

	No. 200	No. 100
Width of doorway required.....	6½ ft.	5½ ft.
Wheel tread, Center to Center.....	65¾ in.	58½ in.
Length of box.....	110 in.	72 in.
Width of box.....	Front..... 41 in.	36 in.
	Rear..... 42¾ in.	37¼ in.
Depth of box.....	17½ in.	17½ in.
Overall length.....	15 ft. 8 in.	12 ft.
Pneumatic tires.....	7.50 x 20	5.50 x 16
Height to top of box from ground.....	37 in.	34¾ in.
Ground clearance—drive sprocket.....	6½ in.	5 in.
Sprocket teeth contacting chain.....	22%	25%
Capacity of hopper.....	65 bu.	40 bu.
Upper beater size.....	12 in.	9½ in.
Lower beater size.....	18 in.	14 in.
Ratio—beater to ground wheel (revolutions).....	5-1	4.6-1
Diameter widespread.....	16¾ in.	12 in.
Ratio—widespread ground wheel (revolutions).....	18.3-1	12.9-1
Approximate weight.....	1390 lb.	890 lb.



Nos. 200 and 100 Tractor Spreaders



Illust. 1—The No. 100 tractor spreader is designed for herds up to 15 head of dairy cattle or equivalent in other livestock.

Sturdy Construction

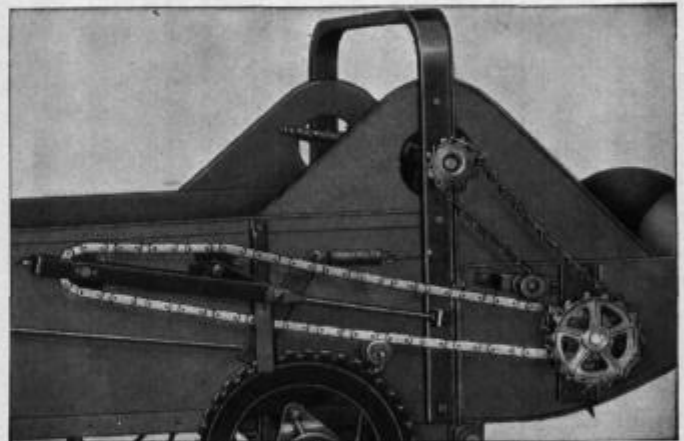
The Nos. 200 and 100 tractor spreaders are constructed to give maximum life and service. Heavy sheet-steel sides and front endgate reinforced with channel and angle steel assure a rigid, liquid-tight box. The wood bottom is impregnated with a special preservative to prevent warping and rotting.

Light Draft

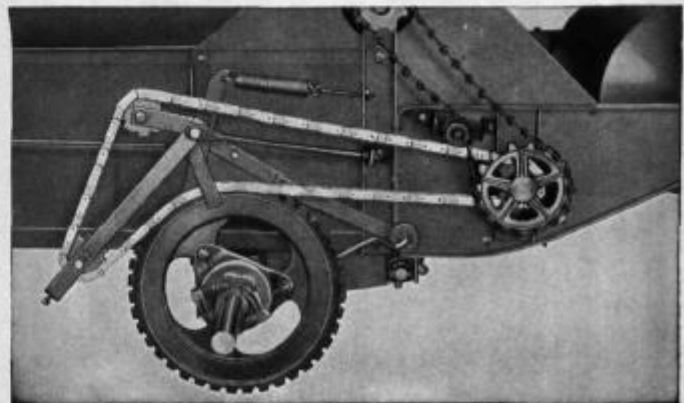
These smooth-running spreaders are regularly equipped with roller bearings in the axle and the drive chain side of the lower beater. The main drive chain has a special roller type link that requires less attention and takes less power to operate.

Convenient Controls

Every necessary adjustment on the spreader can be made from the operator's seat on the tractor. The apron feed can be varied to spread manure at rates of from 4 to 24 loads to the acre. The main drive chain is raised and lowered by the use of a lever-controlled yoke and idler. The chain is so positioned that when the control lever is thrown out of gear, it cannot engage the drive sprocket. When the main drive chain is lowered to contact the drive sprocket, it is held in position to mesh with a maximum number of teeth. The chain cannot slip, thus both sprocket and chain life are increased.



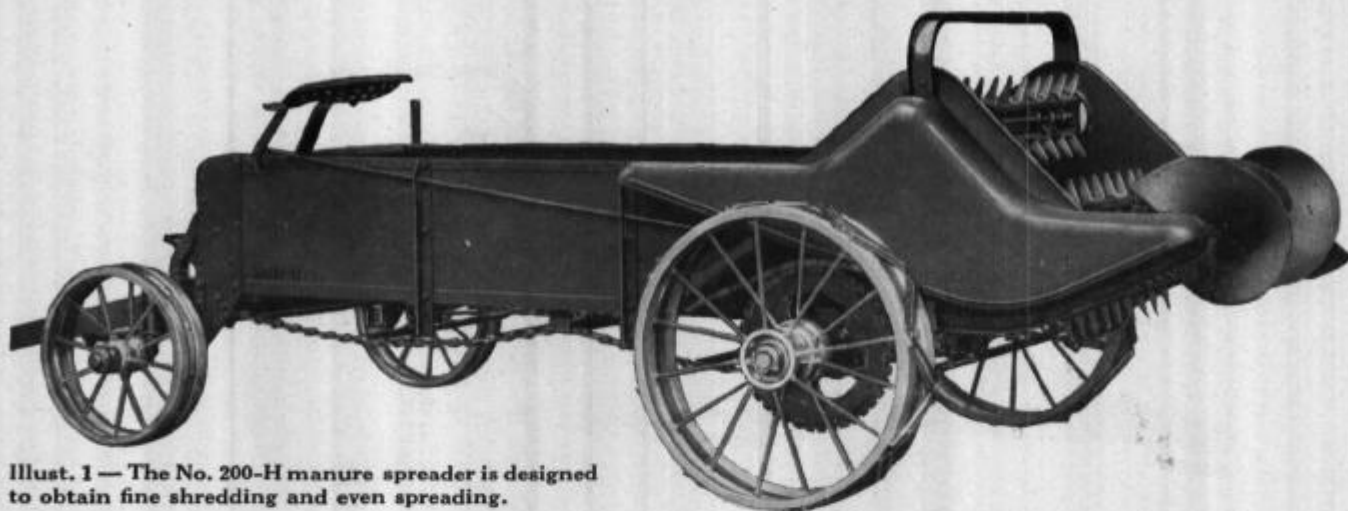
Illust. 2—Main drive chain in non-operating position. A strong spring keeps the chain well away from the driving sprocket when mechanism is out of gear.



Illust. 3—Main drive chain in operating position. The lever-controlled yoke places the chain on 22 percent of drive sprocket, assuring proper engagement while in operation.



Nos. 200-H and 100-H Manure Spreaders



Illust. 1 — The No. 200-H manure spreader is designed to obtain fine shredding and even spreading.

Nos. 200-H and 100-H manure spreaders are designed to be pulled by horses, or when equipped with a special tractor hitch, by tractors. They are light-draft spreaders, sturdily built for fast spreading.

No. 200-H Manure Spreader

The No. 200-H manure spreader is a heavy-duty, four wheeled spreader with an approximate capacity of 65 bushels of manure. Its size is ample for the farm with a large number of livestock. It is regularly equipped with steel wheels, tongue and two-horse evener. The No. 200-H has five apron speeds that will spread manure at rates ranging from 4 to 24 loads an acre.

No. 100-H Manure Spreader

The No. 100-H, shown on the following page, is a lightweight manure spreader with an approximate capacity of 45 bushels. A single, swivel-type front wheel makes it highly maneuverable. Its light weight enables it to pass over relatively slippery fields, while the

- Low-built, easy to load.
- Tractor or horse-drawn.
- Light-draft construction—easy running roller bearings, roller chain drive.

balance is such that the rear wheels support most of the weight; thus, traction is ample under all conditions. This easy-running spreader can be pulled readily by a team of small-size horses.

Regular Equipment

Steel wheels (No. 200-H). Pneumatic tires (No. 100-H). Shields. Widespread.

Special Equipment

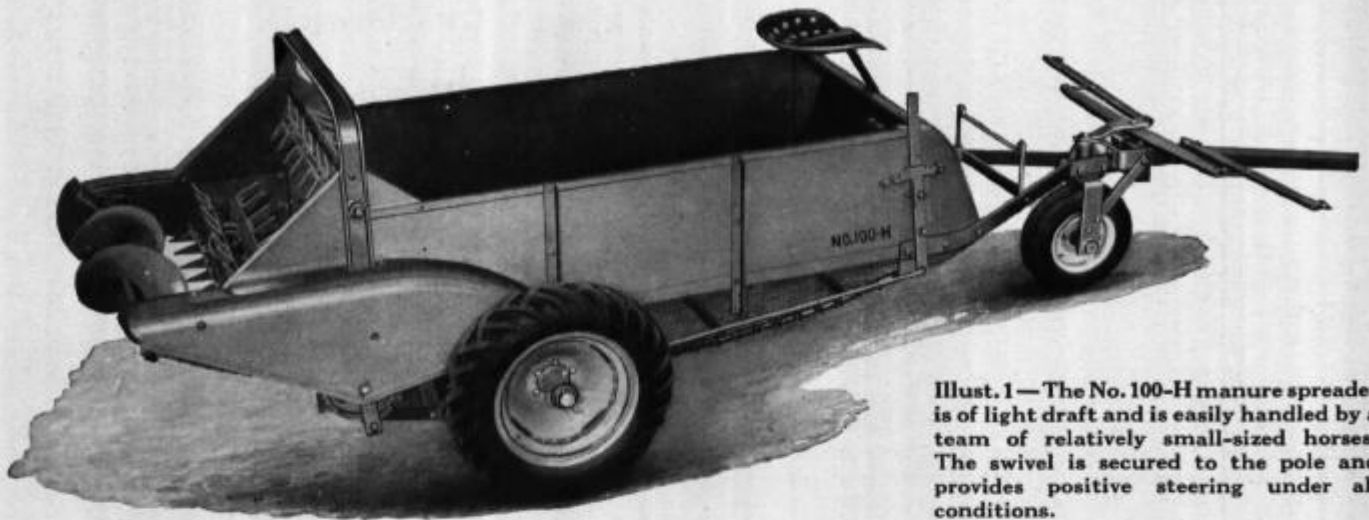
Endgate. Rear pan attachment. Tractor hitch. Hand-brake attachment (200-H). Three horse hitch. Pneumatic tires (200-H).

Specifications

	No. 200-H	No. 100-H
Width of doorway required	6 ft. 8 in.	5½ ft.
Wheel tread, center to center	{ Front 65½ in. Rear 63½ in.	58½ in.
Length of box	110 in.	72 in.
Width of box	{ Front 41 in. Rear 42¾ in.	36 in.
Depth of box	17½ in.	37¼ in.
Overall length (less tongue)	13 ft. 8 in.	17½ in.
Pneumatic tires (Special equipment for No. 200-H)	{ Front 5.50 x 16 in. Rear 7.50 x 20 in.	12 ft.
Height to top of box from ground	38 in.	4.00 x 9 in.
Ground clearance—drive sprocket	7¼ in.	5.50 x 16 in.
Sprocket teeth contacting chain	22%	34¾ in.
Capacity of hopper	65 bu.	5 in.
Upper beater size	12 in.	25%
Lower beater size	18 in.	40 bu.
Ratio—beater to ground wheel (revolutions)	5-1	9½ in.
Diameter wide tread	16¾ in.	14 in.
Ratio—wide spread ground wheel (revolutions)	18.3-1	4.6-1
Approximate weight	1,545 lb.	12 in.
		12.9-1
		1,000 lb.



Manure Spreader Features



Illust. 1—The No. 100-H manure spreader is of light draft and is easily handled by a team of relatively small-sized horses. The swivel is secured to the pole and provides positive steering under all conditions.

Wheels

The Nos. 200-F, 200, 100 and 100-H manure spreaders are regularly equipped with pneumatic-tired wheels. The No. 200-H manure spreader is regularly supplied with steel wheels. These wheels are extra wide to provide traction even on soft ground. The spokes are riveted in hubs and rims to assure true running wheels.

Flooring

All of the spreaders with the exception of the No. 200-F tractor spreader have wooden floors impregnated with a preservative. The No. 200-F tractor spreader has an all-metal box with plastic-sealed, liquid tight seams. A sump hole permits draining liquid from the sump bottom.

Beaters

The beaters on the manure spreaders have self-cleaning, U-shaped, double-riveted tapered teeth. These teeth are so arranged on the beater that they will effectively shred the manure. They are of high carbon steel to prevent bending and breaking, and to maintain a shredding edge.

Widespread Spiral

The two-section widespread spiral is of auger-type construction which withstands vibration and hard work.

True-Alignment Construction

The apron shaft and axle are rigidly mounted in true alignment, which assures permanent, accurate meshing of gears and chains and contributes to the longer life of the manure spreader.

Roller-Chain Main Drive

The main-drive roller chain is much stronger than chains customarily supplied for this purpose, assuring long life and trouble-free operation. Positive drive-chain control to effect proper engagement is assured by the chain guide on the raising yoke and an adjustable rod aligning the chain and sprocket. A spring-tension idler and raising arm hold the chain off the sprocket while out of gear so that there is no engagement while transporting. All control levers are within easy reach of the operator.



Illust. 2—The action of the lower and upper beaters on tractor-trailer and horse-drawn spreaders shreds the litter fine for quick plant use.



Illust. 3—Reinforced malleable brackets hold the 2-piece widespread spiral securely to its shaft.



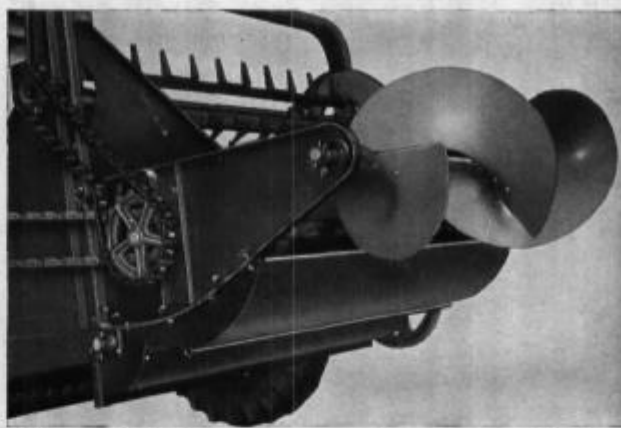
Illust. 4—Accurate feed is maintained during the long life of the spreader by means of a drop-forged driving pawl and cam. The apron shaft and axle are rigidly mounted in the same steel plate.



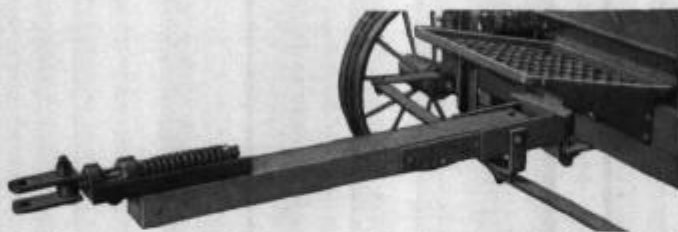
Special Equipment for Manure Spreaders



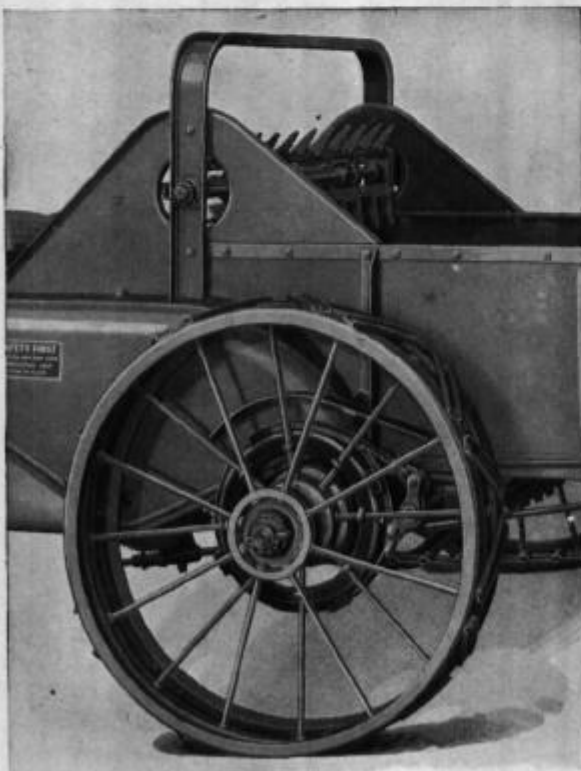
Illust. 1—The endgate for containing semi-liquid manure is available for tractor-trailer and horse-drawn spreaders. It is adjustable for height.



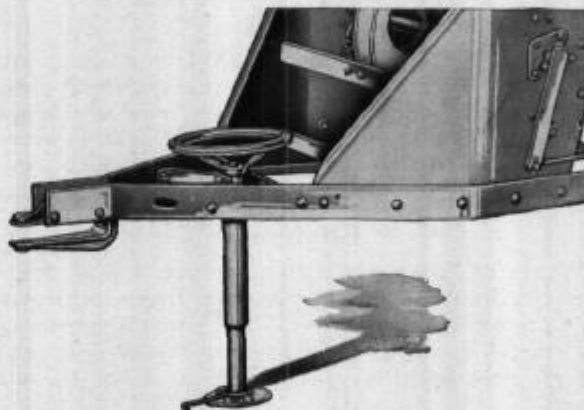
Illust. 4—The rear pan attachment is useful in hilly sections for holding semi-liquid manure in the spreader until the field is reached.



Illust. 2—ZMA89 tractor hitch is available on special order for the No. 200-H spreader.



Illust. 3—ZMA637 hand-brake attachment is supplied on special order for the No. 200-H spreader when equipped with steel wheels. It is controlled by a lever convenient to the operator.



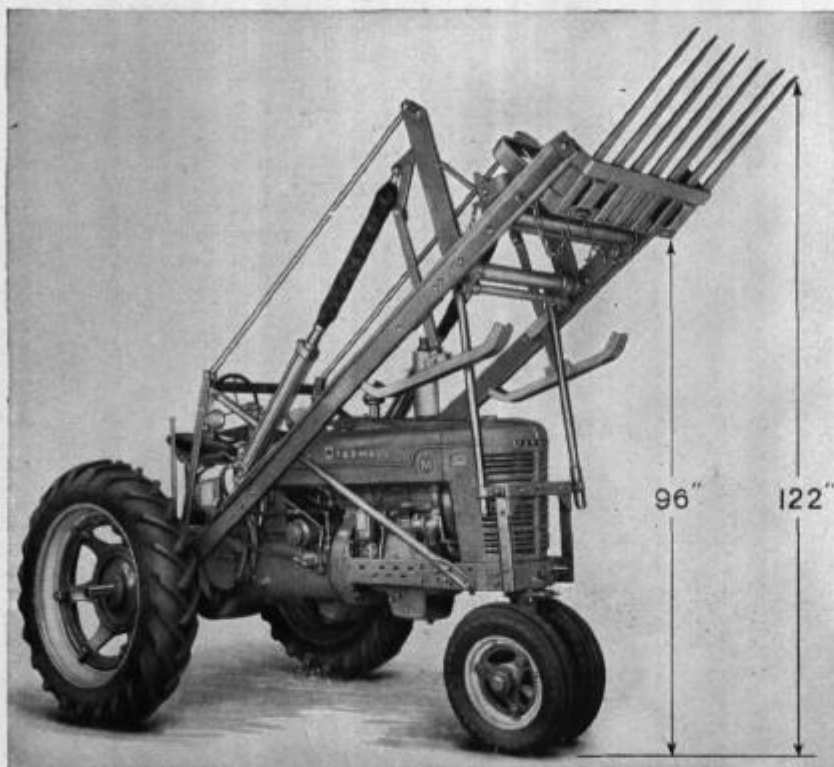
Illust. 5—A lifting jack is available for the Nos. 200-F and 200 tractor spreaders. When the spreader is being transported, it may be swung back out of way. The height of the hitch from the ground may be regulated by the handscrew on the jack.



Illust. 6—ZMA638 hand-brake attachment for No. 200-H spreader when equipped with pneumatic tires, showing mounting of drum to the rim.



No. 30 Power Loader



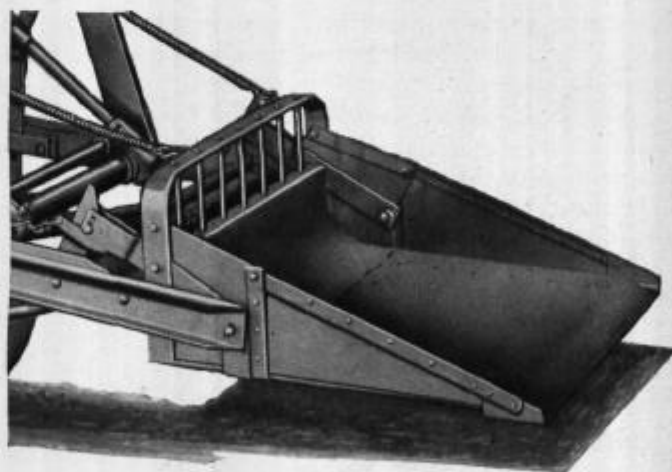
Illust. 1 — The No. 30 power loader with fork in highest lifting position. The Lift-All and dumping controls are within convenient reach of the tractor operator.

- Operates safely with minimum strain on tractor front tires.
- Greater power capacity to break manure loose.
- Loader can be operated any place the tractor can be driven.
- One person can quickly attach or detach loader.

The No. 30 power loader for use with the Farmalls H and M tractors equipped with the hydraulic Lift-All, is a heavy-duty loader which can be used for all types of loading work everywhere on the farm.

This loader is capable of lifting from 500 to 800 pounds of livestock manure, which is a full-scoop load. It will lift more of certain other materials which are heavier—up to 1,500 pounds at dump-truck loading height.

One important advantage is the ability of the No. 30 power loader to break up heavy fibrous materials on the ground, such as manure in feed lots. A maximum lifting thrust of up to 5,000 pounds is exerted in the first 6 inches of upward travel.



Illust. 2 — The tine cover is supplied without extra cost to provide a scoop for loading loose material.

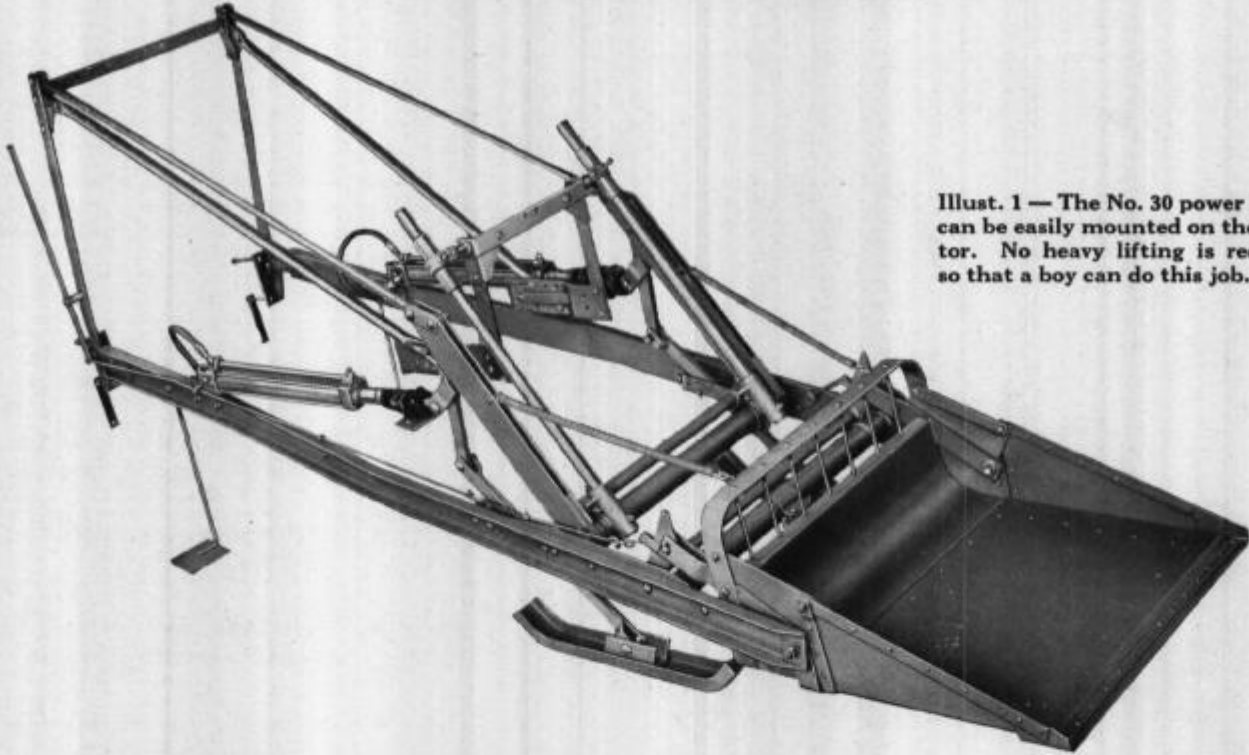
Specifications

Maximum lift at 6 in.....	5,000 lb.
Maximum lift at manure spreader height.....	1,500 lb.
Capacity of fork or scoop in manure.....	500-800 lb.
Distance to heel of fork when fully raised, on Farmall M (subject to ground conditions and tire inflation).....	96 in.
Distance from ground to tip of tines when tines fully raised (on Farmall-M).....	122 in.
Width of fork.....	43½ in.
Length of fork.....	38 in.
Size of hydraulic Lift-All cylinders (two used).....	3 in. x 28 in.

Overall length of tractor and loader:	
When mounted on the Farmall H.....	202½ in.
When mounted on the Farmall M.....	206 in.
Overall width of tractor and loader:	
When mounted on the Farmall H.....	75½ in.
When mounted on the Farmall M.....	84½ in.
Overall height when lowered to ground:	
When mounted on Farmall H.....	78 in.
When mounted on Farmall M.....	81½ in.
Approximate weight of loader, less tine cover.....	1,268 lb.
Approximate weight of tine cover.....	85 lb.



No. 30 Power Loader



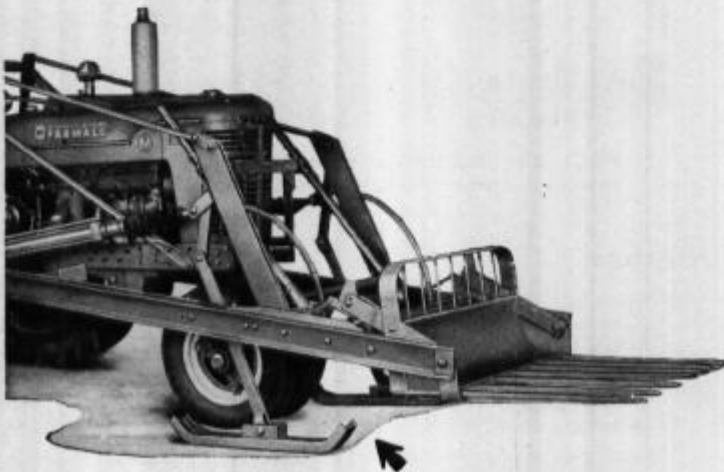
Illust. 1 — The No. 30 power loader can be easily mounted on the tractor. No heavy lifting is required so that a boy can do this job.

The safety shoe and toggle mechanism of the No. 30 power loader relieve the front of the tractor of the strain required to break manure loose when packed solidly in feeding sheds and yards. As a result the tractor front wheel axles, bearings and tires are protected from excessive strain.

The safety shoes provide a solid base capable of withstanding the initial thrust in heavy-duty work without damage to the tractor or the loader. In soft-ground conditions, the safety shoes prevent the front wheels from becoming mired down.

The fork or scoop is actuated by the hydraulic Lift-All control which is located within easy reach of the operator. The fork or scoop can be raised, lowered or stopped in any position and is stopped automatically in the highest position. Stabilizers prevent swaying and twisting when lifting.

The tines are made of heat-treated manganese steel, and each tine is fastened so that the bolt will shear if the loader, moving at fast travel speed, should strike a hard object. The points are self-sharpening so that easy penetration in compact manure is assured.



Illust. 2 — The safety shoe and toggle mechanism prevents putting additional weight on the front end of the tractor until the load is lifted to a height of 6 inches.

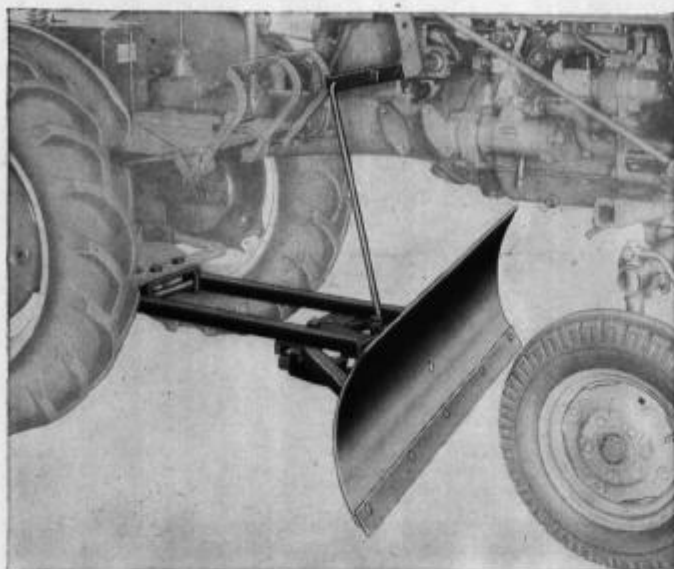


Illust. 3 — The load is easily dumped and the scoop returns automatically to its working position. A long reach makes it easy to maneuver the tractor for dumping.



Farmall Cub

Cub Leveling and Grading Blade



Illust. 1 — The Cub leveling and grading blade can be mounted beneath the Farmall Cub for grading or leveling work. It attaches directly to the reversed drawbar and may be raised or lowered by either hydraulic Touch-Control or Manual control, according to the equipment on the tractor.

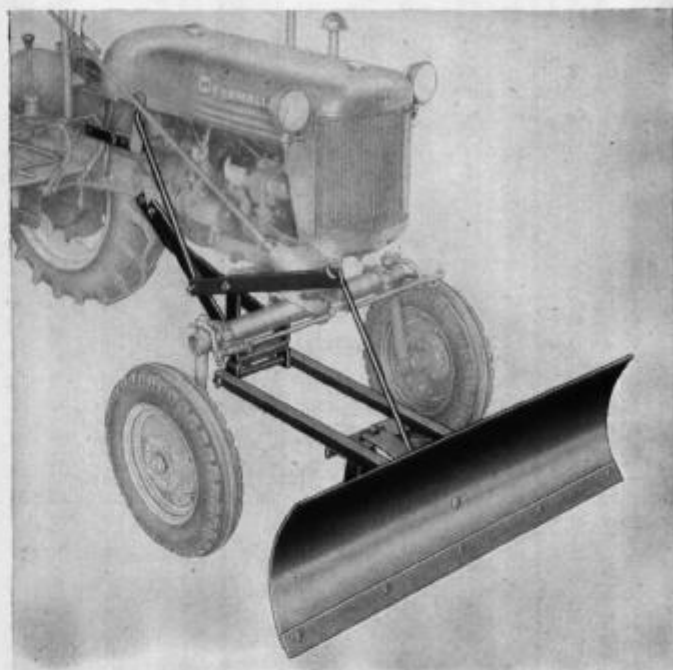
- Mounts on the front of the Farmall Cub for ditching, preparing beds and terraces, snow removal, and many other jobs.
- Mounts under the tractor for grading and leveling.
- Quick-change in either front or under-tractor position.
- Blade can be angled right or left from the central position.
- Ends of blade can be adjusted up or down.
- Pitch of blade is adjustable.
- Controlled by either Farmall Touch-Control or Master Control.
- Blade is equipped with a replaceable, high-carbon steel cutting edge.
- Coil spring absorbs shock loads on the blade.

Regular Equipment

Leveling and grading blade together with front-mount support members and control rods.

Specifications

Blade.....	54 x 16 x 1/4 inches
Cutting Edge.....	54 x 2 1/4 x 1/4 inches
Angled Position.....	Adjustable, 11 or 22 degrees right or left
Blade Pitch.....	Adjustable
Out of Parallel.....	Adjustable 10 degrees up or down
Relief Spring (shock absorbing).....	Maximum load, 2,000 lbs.
Two-position Mounting.....	In front or beneath the tractor
Principal Uses.....	{Earth moving, terracing, filling, grading, leveling, snow plowing
Weight of Unit.....	172 lbs.



Illust. 2 — Versatility is a feature of the Cub leveling and grading blade. Here, it is mounted on the front of a Farmall Cub equipped with hydraulic Touch-Control. A fingertip touch on the Touch-Control lever will adjust the position of the blade as desired.

Fulfills A Real Farm Need

The Cub leveling and grading blade is a lightweight, low-cost dirt and snow moving implement for farm use. It may be mounted either on the front of the Farmall Cub for moving loose material or mounted beneath the tractor for grading and leveling operations. Front-mount support members are included for mounting it in the forward position. In the under-the-tractor position, it attaches directly to the reversible drawbar placed in the forward position.

The blade is 54 inches long by 16 inches high. A separate replaceable carbon steel cutting edge is bolted to the blade. A coil-type relief spring cushions shock loads on the blade, being capable of handling loads up to 2,000 pounds.

What It Can Do

The uses for this Cub implement are many and diverse. They include snow removal, ditching, farm road construction, road maintenance, drainage, and irrigation.

It will maintain ditches, repair eroded areas, and fill gullies which develop in the land. This Cub implement will move any loose material, whether it be dirt, sand, gravel, grain, or snow. It will backfill ditches.

Other jobs performed by the Cub leveler and grader include the preparation of seed beds, largely a leveling



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Farmall Cub

Cub Leveling and Grading Blade

(Continued)

operation, and terracing. It is often a big help in cleaning up feed lots, handling manure, or doing compost work. In fact, there are a hundred and one uses for this blade, which will occur to the individual owner in the course of time.

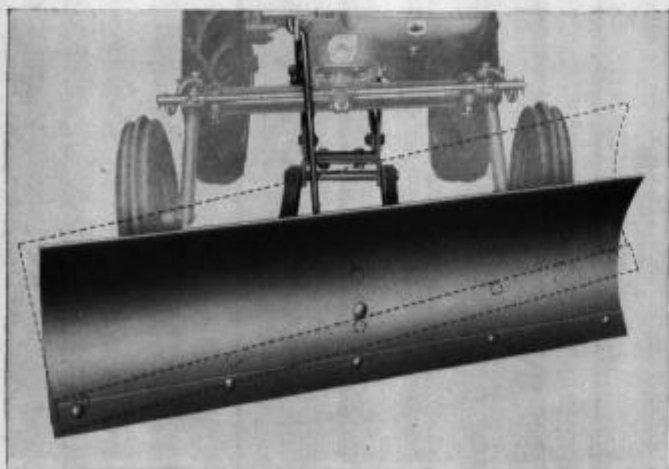
Blade Adjustable for All Conditions

The Cub leveling and grading blade is adjustable in three ways. It may be angled to the right or left, depending upon the direction in which the tractor operator desires to move the load. A second adjustment permits the pitch of the blade to be varied. This changes the vertical angle with which the blade bites the ground, and hence it affects its working capacity and smoothness of operation.

A third adjustment permits the raising or lowering of the blade ends; that is, the blade may be tilted laterally.

Raised and Lowered from the Tractor Seat

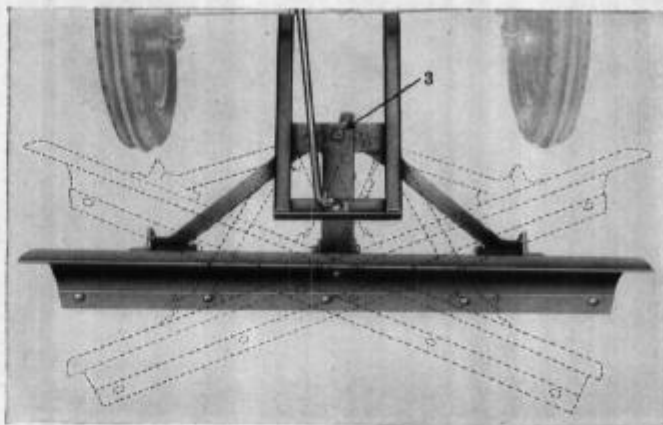
The blade may be readily raised or lowered by either Touch-Control or Manual Control while the tractor is in motion. Thus, the operator completely controls the position of the blade in relation to the ground. The blade is lifted by means of a lift rod or linkage from the front rockshaft or Touch-Control power arm.



Illust. 1 — The ends of the blade may be raised or lowered by a tilting adjustment. Range of adjustment is 10 degrees up or down.

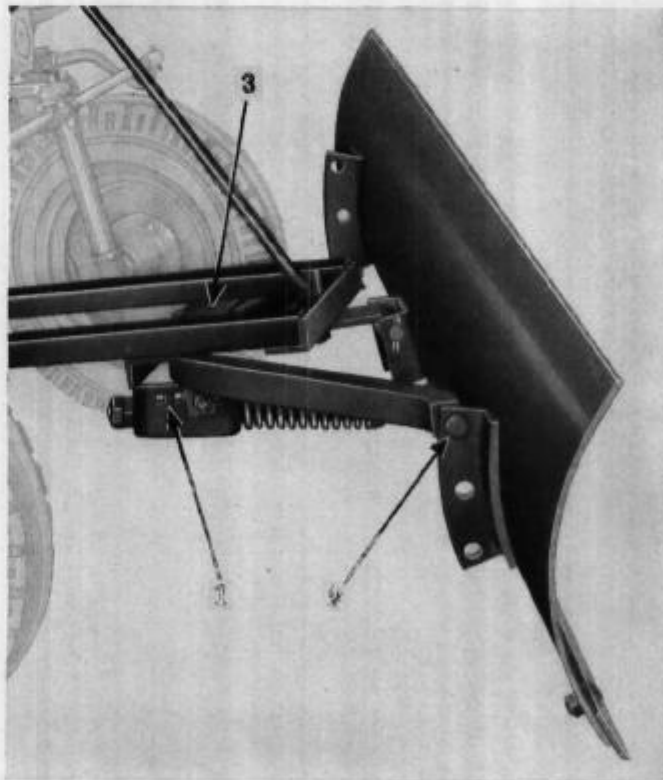
Mounts Beneath Tractor for Grading

When the blade is mounted beneath the tractor, the front-mount support members and linkage rods are not required. The mounting frame of the leveler is attached directly to the drawbar, which is placed on the rear



Illust. 2 — The blade may be angled to the left or right as desired by the operator. This is accomplished by changing the position of bolt (3), which permits five positions: center plus 11 and 22 degrees left or right.

pads in the forward position. The lifting rod connects the leveling blade to the front rockshaft or Touch-Control power arm. The leveling blade may then be raised or lowered by the tractor operator as required.



Illust. 3 — The Cub leveling and grading blade is adjustable in all three planes. The pitch of the blade is changed at (1); edges of the blade are raised or lowered at (2); and angled at (3).



No. 4 Lime and Fertilizer Distributor

- Spreads evenly all forms of dry, free-running lime and commercial fertilizer.
- Rate of distribution controlled from tractor seat.
- Low hopper for easy filling . . . close to ground for even distribution of material without excessive blowing.
- Large capacity hopper . . . fewer delays for refilling.
- Standard size wheels give advantages of pneumatic tire operation at low cost and permit exchange with wheels from other machines.

The No. 4 lime and fertilizer distributor is a tractor trailing machine that handles all types of dry, free-running materials such as hydrate of lime, air-slaked lime, ground rock and commercial fertilizers. It applies a uniform band of material eight feet wide.

Mounted on Low Wheels and Pneumatic Tires

The machine is mounted on standard size disk wheels and 6.00 x 16-in. pneumatic tires. This combination offers all the advantages of pneumatic tire operation at the lowest possible cost. The disk wheels are interchangeable with wheels on other machines and automobile tires and tubes may be used. The machine is supplied with or without traction type implement tires and tubes, as ordered.

Low Position, Large Capacity Hopper

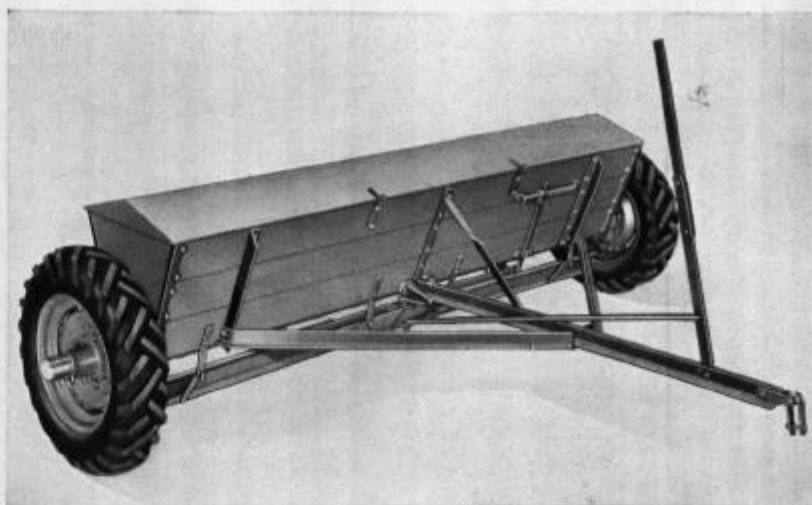
The low position of the hopper permits easy filling. The steel cover serves as a bankboard when shoveling lime or fertilizer into the hopper and can be assembled to open from either the front or rear of the hopper. The cover can be easily removed to permit turning the entire machine over for convenient cleaning. The hopper holds $9\frac{3}{8}$ bushels leveled or $10\frac{1}{2}$ bushels heaping full.

Wide Range of Distribution Rates

An unusually large sowing range adapts the machine to practically all individual requirements—from 350 to 6500 pounds of ground rock per acre, from 250 to 5000 pounds of triple phosphate per acre, and comparable rates for other materials.

Distribution Rate Controlled from Tractor Seat

A lever operated from the tractor seat controls the size of the feed openings in the hopper bottom. A stop



Illust. 1 — No. 4 lime and fertilizer distributor. Low position of hopper and scatter boards assures even distribution. 6.00 x 16 wheel equipment gives all advantages of pneumatic tire operation at low cost. Tractor hitch is regular.

on the quantity scale may be set for any quantity and permits resetting the feed openings to original setting after they have been closed during transport.

Even Distribution

A steady flow of material from the hopper is assured by agitator type feed wheels which revolve above the adjustable openings in the hopper bottom. The low position of the hopper openings and scatter boards prevents excessive blowing of material and assures an even distribution on the ground.

Hopper Feed Wheel Action

The feed wheels are attached to the feed shaft which is in two sections, each shaft extending beyond the ends of the hopper and serving as a ground wheel axle. The rotation of the feed shaft is easily started or stopped by sliding the driving caps in or out on the end of the axle. When in the "in" position the teeth of the driving caps engage the teeth on the wheel hubs and the feed shafts rotate with the ground wheels. The driving caps are held in the engaged or disengaged position by means of spring pressure locking pins.

Pressure Lubricated Bearings

Roller bearings in the ground wheels and in the hopper provide light draft and assure dependable service with a minimum of wear. Chilled plain bearings in the center of the hopper carry the ends of the feed shaft sections. All bearings are pressure lubricated.

Specifications

No.	Description	Width	Net Weight (Approx.)
4	Lime and Fertilizer Distributor . . .	8 ft.	605 lb.



Trailing Lime Spreader



Illust. 1—Trailing lime spreader with pneumatic tired wheels. Wheels for pneumatic tires, less tires and tubes, are optional equipment in place of steel wheels.

The trailing lime spreader is designed to handle limestone, hydrated lime, marl, gypsum, rock phosphate and other fertilizers which are suitable for broadcasting. When traveling at the rate of five miles per hour it will spread a strip of limestone 21 feet wide. The copper-bearing, heavy, sheet steel hopper is wired around the top and reinforced under the bottom. The high back prevents the limestone from being thrown over the top of the hopper. Feed opening slides make it possible to regulate the rate of broadcasting from 100 to 8,000 pounds per acre.

The independent in-and-out-of-gear control is positive and convenient in operation. A safety chain drive protects the gears should the agitators become jammed and may be easily repaired in case of accident. The wheels are equipped with ratchets so that each constitutes an independent drive for operating evenly on the turns.

Equipment

Regular: Lugged steel wheels or wheels for 6.00 x 16-in. pneumatic tires, as specified—tires and tubes not included.

Special: Hitch extension.

- Spreads limestone 21 feet wide, operating at five miles per hour.
- Rate of broadcast from 100 to 8,000 pounds per acre.
- Reinforced, rust-resisting, large-capacity steel hopper.
- Rugged all-steel frame with automotive-type axle and heavy-toothed gears.



Illust. 3—Spreader with lugged steel wheels. The hopper is 36 in. wide, 30 in. long, and 18 in. deep. There is no obstruction in the rear to interfere with the uniform flow of limestone. The fans are correctly shaped for spreading at truck speeds.



Illust. 2—A hitch extension is available on special order when an extra-long hitch is required. Adjustments are provided for raising or lowering the tongue so that the front edge of the hopper will just clear the wagon or truck bed.

Specifications

Description	Net Weight (Approx.)
Trailing lime spreader with lugged steel wheels.....	218 lb.
Trailing lime spreader with wheels for 6.00 x 16-in. tires (less tires and tubes).....	208 lb.
Width of spread when operating at 5 m.p.h.....	21 ft.



FARM AND TRAILER TRUCKS

Section 16

Tractor Trailer:

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Description	440-441
Specifications	440

All-Purpose Farm Truck:

Description	442-443
Specifications	442

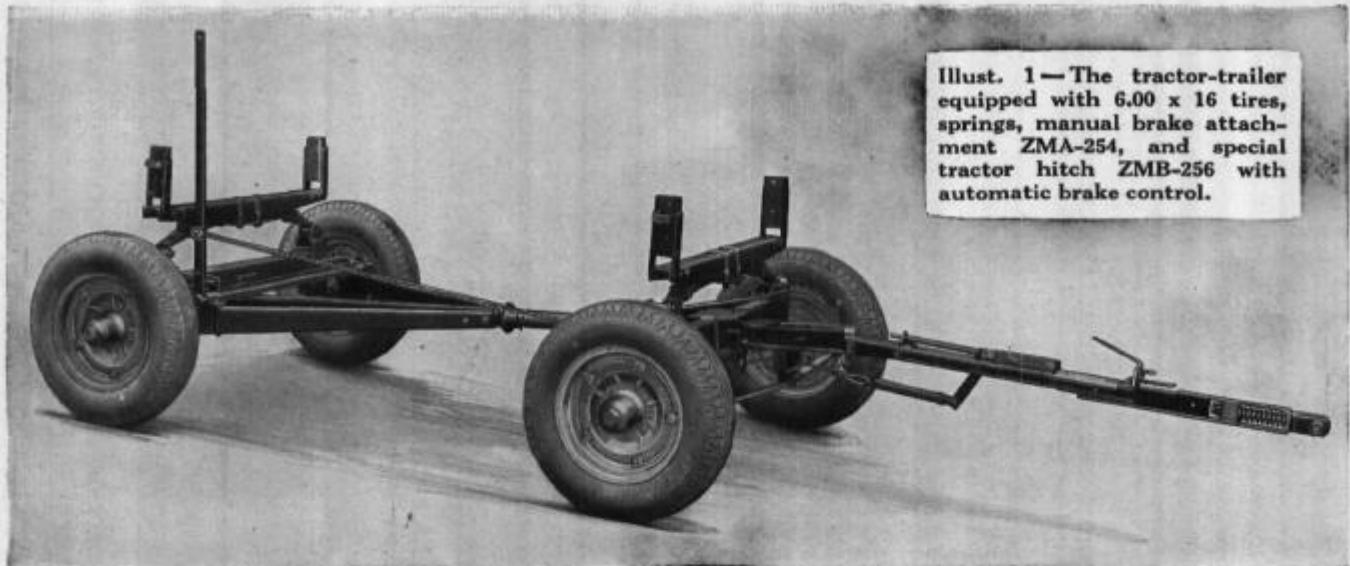
All-Steel Grain Box:

Description	444
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Tractor-Trailer



Illust. 1—The tractor-trailer equipped with 6.00 x 16 tires, springs, manual brake attachment ZMA-254, and special tractor hitch ZMB-256 with automatic brake control.

The tractor-trailer is designed to meet the requirements of present-day practices in marketing, feeding and general farm operations. Hard-surfaced roads and the desire for increased traveling speed are extending its use, as these same factors have done to other items of farm equipment now equipped with rubber tires.

The tractor-trailer can be converted quickly from a simple farm truck to a logging gear by the use of the extension reach. It can also be used by public utilities and others for the mounting of tanks, pumping equipment, compressors, welding units for work on the job,

- Wide choice of equipment combinations.
- Wheels have tapered roller bearings.
- Adjustable reach and stake brackets.
- Fully enclosed internal-expanding brakes are available.
- Short turns with auto-type steering knuckles.



Illust. 2—The tractor-trailer equipped as a simple farm truck with 6.00 x 16-in. pneumatic tires, and minus leaf springs, manual brake attachment and special tractor hitch.

concrete mixers, tool shed, jack hammers, or auxiliary electric power transformers for emergency service, etc.

Extra-rugged construction provides years of trouble-free service, whether in farm or industrial use. Though designed for heavy duty, the trailer is of relatively light weight because of the high quality of materials and employment of electric welding in its manufacture.

The wheels are automobile type, being made from pressed steel and equipped with demountable rims for easy interchange of tires. High-grade automobile-type tapered roller bearings are used in the wheels and are adjustable to take up wear.

Specifications

Road capacity.....	5,000 lb.
Wheelbase, regular.....	7-10½ ft.
Wheelbase, special.....	11, 11½, 12, and 12½ ft.
Stake brackets, adjustable for 38, or 42 in. wagon boxes.	
Turning radius, short coupling.....	141 in.
Turning radius, 126-in. coupling.....	189 in.
Pneumatic tires:	
Regular.....	6.00 x 16
Special.....	5.50 x 16, 6.50 x 16, 7.00 x 16 and 7.50 x 16

Weight (approx.):

With 6.00 x 16 tires, springs, manual brake and ZMA-256 tractor hitch with automatic brake control.....	1,089 lb.
With 6.00 x 16 tires, springs, ZMB-242 tractor hitch, and manual brake.....	1,015 lb.
With 6.00 x 16 tires, springs, and ZMB-242 tractor hitch.....	852 lb.
With 6.00 x 16 tires and ZMB-242 tractor hitch.....	742 lb.

Specifications subject to change without notice.

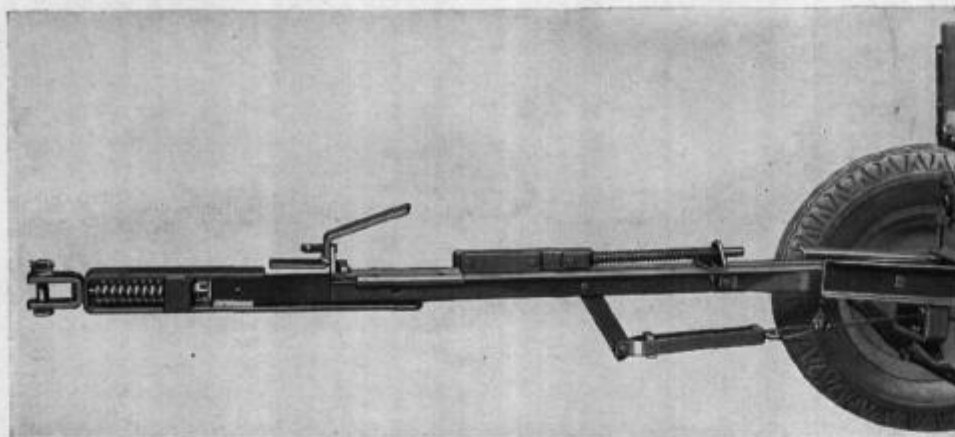


INTERNATIONAL HARVESTER



Tractor-Trailer

(Continued)



Illust. 1 — The automatic brake control is a part of the tractor hitch. When the brake is applied to the tractor, the thrust of the tractor-trailer against the hitch actuates the brake mechanism by spring pressure. Pulling ahead again releases the brake. Means are provided for locking the hitch when it is necessary to back up. Manual control is possible from the tractor seat by means of a rope fastened to the top of the brake lever and extending to the tractor seat.

Telescoping Reach

The reach consists of two structural steel pipes, one telescoping into the other and connected with a coupling designed to permit flexing. The axles are held in alignment by the front and rear hounds. The design of the hound connections is such as to assure equalized draft at both ends of the rear axle. This construction relieves the axle of unusual stress in heavy hauling, as the pull is not applied on the axle center.

Automatic or Manual Brake Control

For safety at road speeds it is essential that the tractor-trailer be equipped with brakes. Fully-enclosed, internal-expanding brakes are supplied on special order for the rear wheels. These provide quick and positive action under all conditions. Provision is made both for

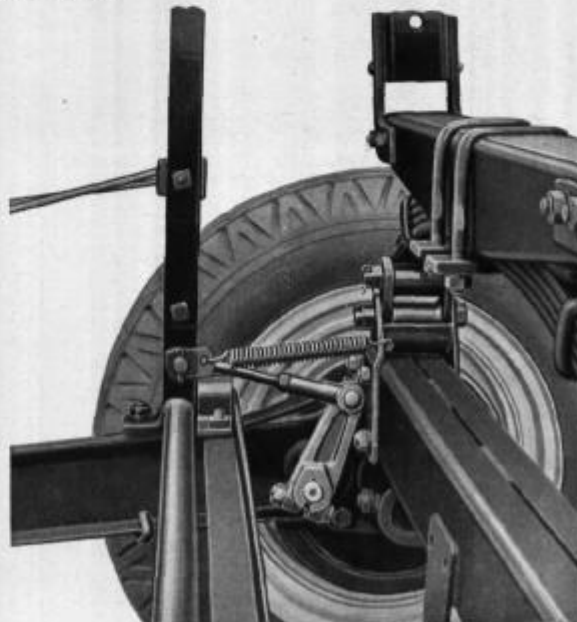
automatic and manual brake operation or a combination of the two controls.

Auto-Steering Front Wheels

The auto-steering feature permits the front wheels of the tractor-trailer to make short turns. Auto-type steering knuckles and lever mechanism give a turning radius of 141 inches when coupled short and 189 inches when set for the 126-in. wheelbase. Both front and rear axles consist of two channel steel members which are electrically welded. This forms a box that provides a rigid connection for the spindle bracket and thus assures perfect alignment together with correct pitch and gather for the wheels.



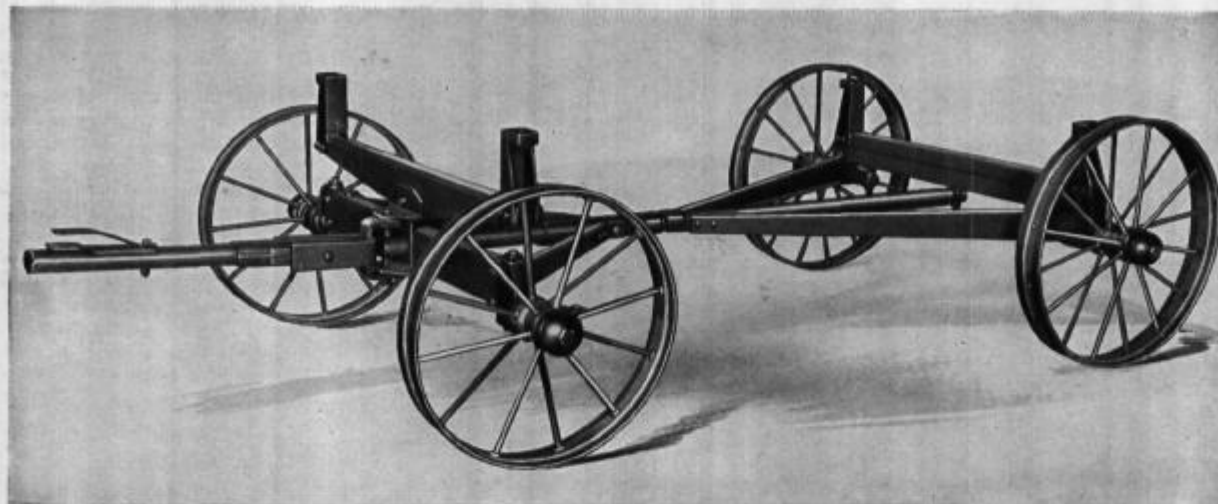
Illust. 2 — Rear wheel of tractor-trailer removed, showing the internal-expanding brake mechanism, tapered roller bearings and hub cap.



Illust. 3 — Brake mechanism for the tractor-trailer, with lever for manual operation and cable extending to tractor hitch for automatic operation.



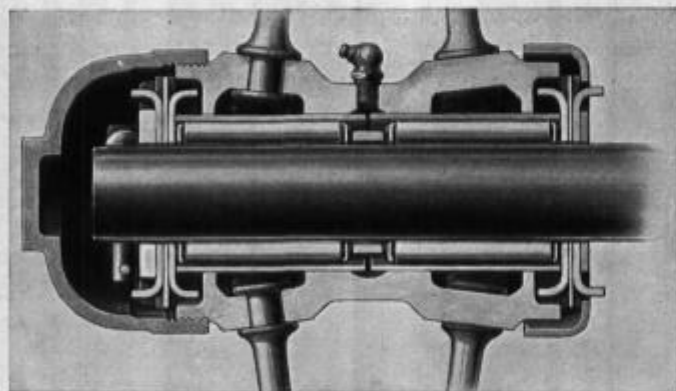
All-Purpose Farm Trucks



Illust. 1 — Pressed steel channels and reinforced tubular reach construction of the rugged all-purpose farm truck give it a load capacity of 5,000 lbs. Steel 4-in. rim wheels have controlled spoke tension, great strength and are true running.

Here is a farm truck that is easy rolling yet amply strong to haul loads of 5,000 pounds. Sturdy construction permits operating speed of 15 miles per hour on pneumatic tires. Axle construction prevents thrust wear on all parts except inexpensive replaceable washers. In fact, through the entire truck, all wear is avoided on any permanent part, making for long life and low-cost hauling.

- Hauls heavy loads at tractor speeds.
- Choice of pneumatic-tired or steel wheels.
- Floating type front bolster.
- Pressed steel channels and flexible reach coupling.
- Auto-type steering front wheels for short turns.



Illust. 2 — Cross-section of all-purpose farm truck wheel hub. All thrust wear is taken by washers which can be easily and economically replaced.

Wheelbases, adjustable for length, and stake brackets, adjustable for 38 and 42-in. wagon boxes, make it possible to use almost any type of box, bed, or rack desired.

Equipment

Either a tractor hitch, or a two-horse hitch (with wood or steel pole) equipped with stay chains can be supplied. Choice of drop-center rim wheels taking 5.50 x 16, 6.00 x 16, 6.50 x 16, or 7.00 x 16 tires, or steel wheels with 4-in. rims. Drop-center rim wheels taking 7.50 x 16 tires can be supplied on special order at extra cost; also supplemental bolster for use with pneumatic tires and a sprocket for operating endgate seeder or lime sower.

Specifications

Road capacity	5,000 pounds
Stake brackets, adjustable for 38 and 42-inch wagon boxes.	
Wheelbase, in inches (regular)	81, 84, 96, 108, 120, 126
Wheelbase in inches (special)	132, 138, 144, 150, 156
Turning radius, short coupling	10 feet
Turning radius with long wheelbase (126 inches)	15 feet
Road clearance at tie bar	11½ inches

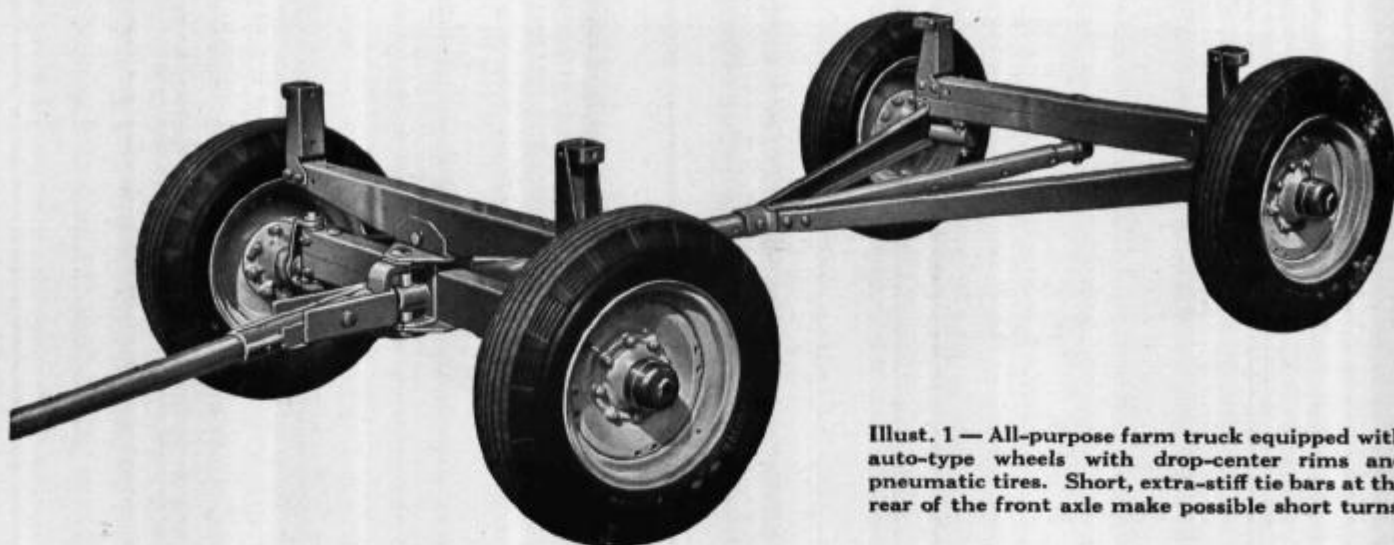
Specifications are subject to change without notice.

Height from ground to top of bolster:	
Front, with steel or rubber	25 inches
Rear, with steel wheels	23 inches
Rear, with 6.00 x 16 tires	21 inches
Rear, with 6.00 x 16 tires and supplementary bolster attachment	25 inches
Weight with steel rim wheels	609 pounds
Weight with pneumatic tires	642 pounds



All-Purpose Farm Truck

(Continued)



Illust. 1 — All-purpose farm truck equipped with auto-type wheels with drop-center rims and pneumatic tires. Short, extra-stiff tie bars at the rear of the front axle make possible short turns.

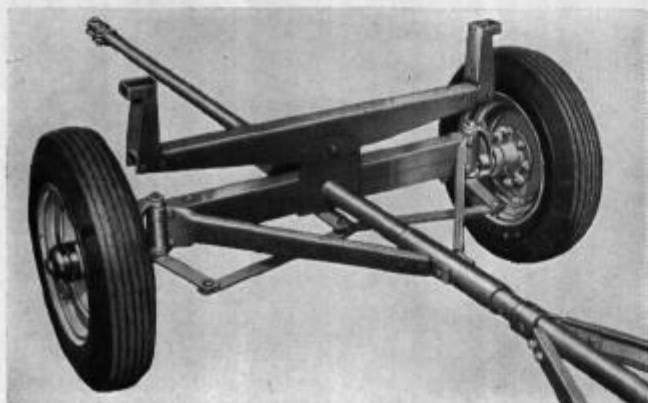
The automotive-type steering, for short turns, has the tie bars at the rear of the front axle. In this position they are out of the way and can be much shorter than usual, thus making possible stiff steering rod construction. The couplings on the telescoping reach protect the truck from stress over rough ground. The front bolster has sufficient float to prevent strain on the box or rack in making short turns. There is an eye in the end of the telescoping reach to which the hitch for a second truck may be attached.

Pressed steel channels are welded together to form sturdy box sections for both front and rear axles. Stub axles are of cold-rolled carbon steel. Extra-long front and rear hounds secure the axles to the tubular reach. The extra durable 4-in. rim wheels are made on an automatic machine that shoulders and rivets the spokes in the tire. The wheels are produced with controlled spoke tension, assuring perfect roundness. The wheels turn on heavy-duty roller bearings with replaceable races.

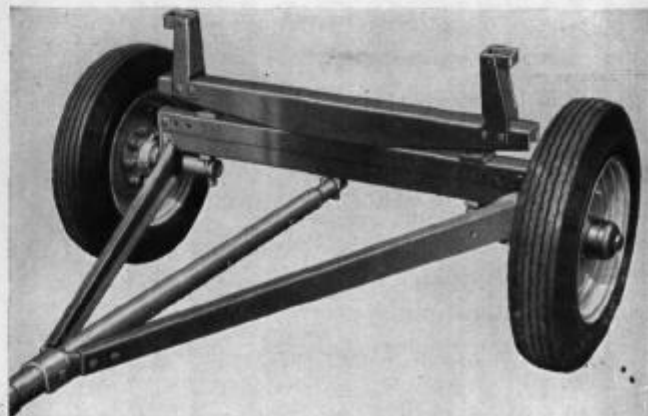
Washers at the ends of the axle hubs take end thrust wear and are replaceable. The steering tie rods also have replaceable bushings.



Illust. 3 — Cushion-spring tractor hitch with part of pipe removed. It is designed so that in an extremely cramped position the coupling rod has sufficient freedom of movement to avoid bending or breakage.



Illust. 2 — Stiff steering rod construction is possible because the steering mechanism is placed to the rear of the front axle. Tubular reinforcement protects the reach from buckling as a result of sudden jolts.



Illust. 4 — Pressed steel channels form the box section for both front and rear axles. The supplemental bolster as shown is available as extra equipment for use with pneumatic tires.



All Steel Grain Box



Illust. 1 — View of the sturdy all-steel, flare-type grain box. The box is 10½ ft. long, 38 in. wide at the bottom and 54 in. wide at the top.

Sturdy, Rigid Construction

The large-capacity, flare-type, all-steel grain box, for use on all-purpose farm trucks, offers many advantages when used with harvester-threshers, corn pickers or ensilage harvesters, as well as for other farm hauling operations. The box is constructed of copper-bearing, rust-resisting sheet steel. Each side of the box is reinforced and braced with two lateral, full-length, seam-welded side braces, assuring long life of the box under maximum loads and adverse hauling conditions. This type of construction eliminates the necessity of a cross tie chain.

- Copper-bearing, rust-resisting all-steel construction assures years of service.
- No projecting bolt heads on inside of box.
- Holds 100 bushels of grain.
- Sturdy construction prevents bulging of sides—even with endgate removed.

Large Capacity Box

The box is 10 ft. 6 in. long and 36 in. deep. It is 54 in. wide across the top and 38 in. wide at the bottom. The box holds 100 bushels of grain, or 5,000 lbs. The inside of the grain-tight box is entirely clean, there are no bolt heads or other obstructions projecting inward to interfere with scooping or cleaning the box.

Removable Rear Endgate

The rear endgate has a sliding lower panel to facilitate emptying the box. The sturdy, rigid construction and bracing of the all-steel grain box permits removing the rear endgate, thereby making the box adaptable for many farm jobs other than grain hauling. The front end is bolted into place and should not be removed. Approximate weight of the grain box is 710 lbs.



Illust. 2 — Top view of the grain-tight, all-steel grain box, showing sturdy construction of the rear endgate with sliding lower panel. Note that entire inside of box is clean, with no projecting bolt heads or other obstructions.



Engines:

	<i>Page</i>
Type LB (1½-2½ and 3-5 hp.)	446-449
Pump jack for LB engines	450

Power Units:

(Carburetor type)

U-2.....	451-453
U-4.....	451-453
U-6.....	451-453
U-9.....	451-453

(Diesel type)

UD-6.....	454-457
UD-9.....	454-457
UD-14A.....	454-457
UD-16.....	454-457
UD-18A.....	454-457
UD-24.....	454-457
Specifications (all models).....	456-457
Equipment and attachments.....	455-B



International Type LB Engine

(1½ 2½ hp. and 3 to 5 hp. sizes)



Illust. 1 — The 1½ to 2½ hp. and 3 to 5 hp. hopper-cooled engines are similar in design. Carburetor for gasoline operation is regular equipment, but both sizes can be equipped for operating with either kerosene or natural gas.

- Automotive type valve construction.
- Automatic lubrication throughout, including valve guides and rocker arm bearings.
- High-tension magneto with impulse coupling for easy starting.
- Hand throttle variable speed control.
- Can be operated on gasoline, kerosene, or natural gas.

Two Sizes

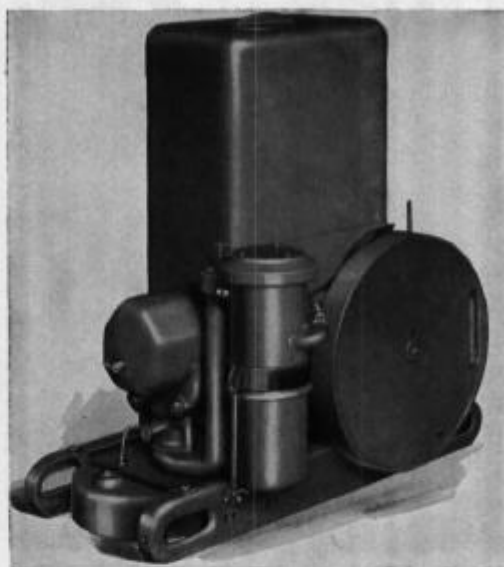
International LB engines, with their improved cylinder head design, provide dependable power for many jobs on the farm and in industry. These engines are built in two sizes with variable power ratings, depending upon the speed adjustments made for maximum or minimum power. Both sizes are easy to start, simple in construction and operation, and are fully enclosed so that all working parts are protected from the weather and from dust and dirt. Their compact size and light weight makes them easy to install and move from place to place as occasion may require.

Regular Equipment

High-tension, rotary-type IH magneto with impulse coupling. Gasoline carburetor with suction feed. Water hopper. Belt pulley—6-inch diameter for 1½-2½ hp. engine and 8-inch diameter for 3-5 hp. Engine skids.

Special Equipment

Plain pulleys 3 to 14 inches in diameter (optional in place of regular pulleys). V-belt pulleys 10, 13 and 15



Illust. 2 — Engine shown equipped with auxiliary water hopper, available as special equipment where increased cooling capacity is desired. Supplementary tank or barrel cooling is made possible on the 3 to 5 hp. engine by the cylinder head design.

inches in diameter. Special 14½-inch diameter flywheel with 2 grooves for V-belt drive on 1½-2½ hp. engine. Friction clutch sprocket. Friction clutch pulleys 8½, 10 and 12-inch diameter. Auxiliary water hopper. Auxiliary radiator for 3 to 5 hp. engine. Oil-type air cleaner. Spark arrester for 3-5 hp. engine. Kerosene attachment. Natural gas attachment. Two-wheel hand truck.

Engine Specifications

Description	1½ to 2½ hp.	3 to 5 hp.
Horsepower		
at engine speed 600 r.p.m.....	1½	3
at engine speed 1000 r.p.m.....	2½	5
Bore.....	3½-in.	4-in.
Stroke.....	3¼-in.	4½-in.
Engine speed, r.p.m.....	600 to 1,000	600 to 1,000
Flywheel size.....	14½-in. dia. 1½-in. face	17½-in. dia. 2½-in. face
Pulley (regular) takes 4-in. belt..	6-in. dia. 5-in. face	8-in. dia. 5-in. face
Pulley speed, r.p.m.....	300 to 500	300 to 500
*Water hopper—capacity.....	2½ gallons	4 gallons
*Fuel tank—capacity.....	1½ gallons	2 gallons
*Lubricating oil—capacity.....	1 quart	3 pints
Length, overall		
Hopper-cooled.....	28-in.	33½-in.
Radiator-cooled.....	....	35½-in.
Width, overall		
Hopper-cooled.....	16½-in.	19½-in.
Radiator-cooled.....	....	25-in.
Height, overall		
Hopper-cooled.....	18-in.	20¾-in.
Radiator-cooled.....	....	37½-in.

*U. S. measure.



INTERNATIONAL HARVESTER



International Type LB Engines

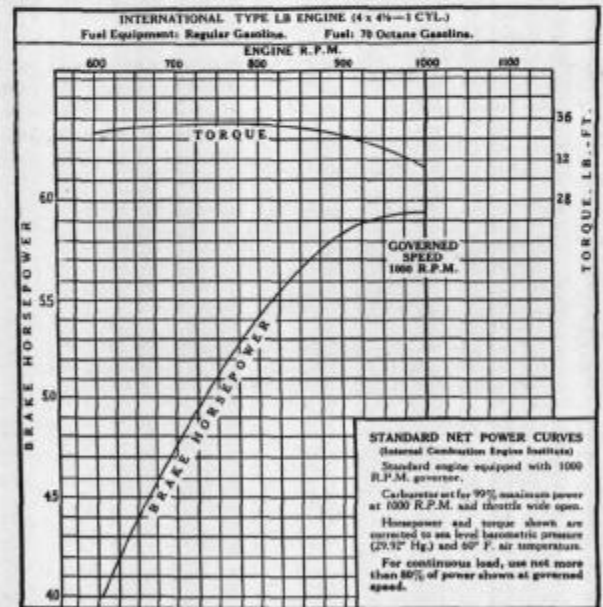
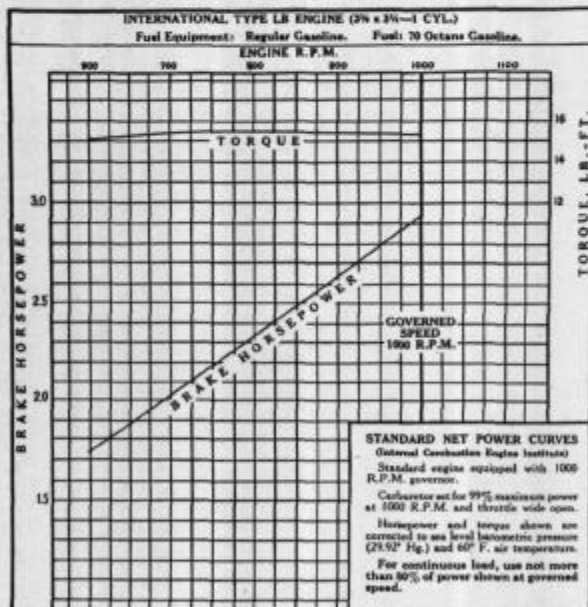
(1½ to 2½ hp. and 3 to 5 hp. sizes)

Equipment Combinations Available for LB Engines

Size	Engine	Equipment	Net Weight (Approx.)
1½-2½ hp.	Regular (hopper-cooled)	Fuel tank with suction feed, 6-in. pulley.....	185 lb.
*1½-2½ hp.	Milk cooler engine (hopper-cooled)	Auxiliary hopper, oversize fuel tank with suction feed, 13-in. or 15-in. V-belt pulley and 120-in. belt.....	230 lb.
3-5 hp.	Regular (hopper-cooled)	Fuel tank with suction feed, 8-in. pulley.....	305 lb.
*3-5 hp.	Milk cooler engine (hopper-cooled)	Auxiliary hopper, fuel tank with suction feed, 15-in. V-belt pulley and 120-in. belt.....	300 lb.
3-5 hp.	Industrial engine (radiator-cooled)	Radiator cooling with blower-type fan, fuel tank with suction feed, oil-type air cleaner, 8-in. pulley.....	440 lb.
3-5 hp.	E-series potato digger engine (hopper-cooled)	Auxiliary water hopper, gravity fuel tank, air cleaner and 20-tooth friction clutch sprocket.....	450 lb.
3-5 hp.	No. 15 hay press engine (radiator-cooled)	Radiator cooling with blower-type fan, fuel tank with gravity feed, oil-type air-cleaner, spark arrested, 8-in. flanged offset pulley and belt.....	475 lb.

*Friction clutch attachment is required for operating the 6-can milk cooler and larger sizes.

Engine Power Curves

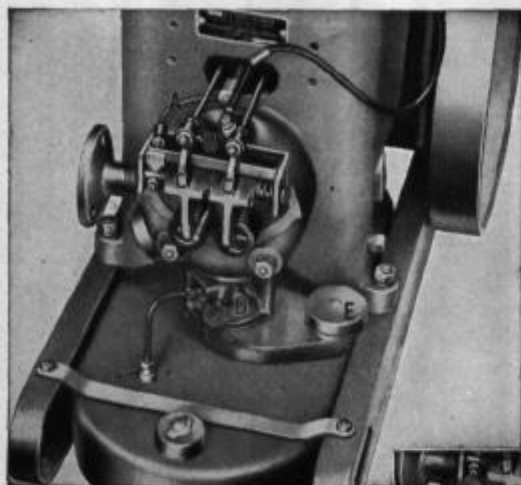


The above fuel economy performance curves are for International LB hopper-cooled gasoline engines. Deduct 5 percent from power shown for 3 to 5 engine equipped with radiator and fan. When kerosene is used for fuel with special kerosene attachment deduct approximately 8 percent from power shown for 1½ to 2½ hp. engine and approximately 10 percent from power shown for 3 to 5 hp. engine. For intermittent load at sea level, the use of 90 percent of maximum horsepower shown on curve is permissible.



International Type LB Engines

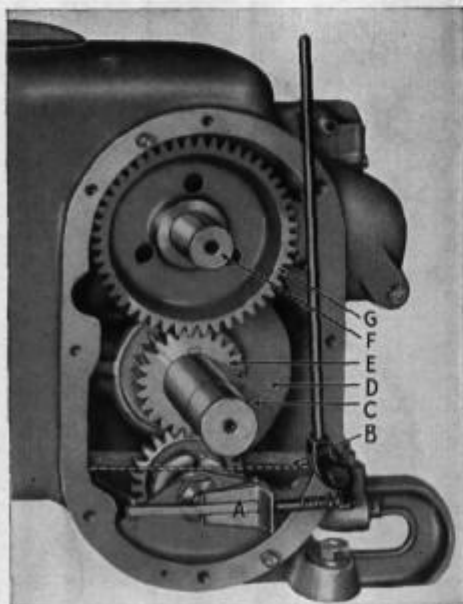
(1½ to 2½ hp. and 3 to 5 hp. sizes)



Illust. 1 — LB engine with valve housing removed to show valve-head mechanism. (A) indicates the tube which carries oil from inside the crankcase to the left wick (B) for continuous lubrication of rocker arm bearings (C) and valve guides. The regular (gasoline) carburetor is shown at (D), and (E) is the choke valve.



Illust. 2 — This shows the engine equipped with special kerosene burning attachment. The kerosene mixer or carburetor is indicated at (D).



Illust. 3 — Flywheel side of LB engine with side plate removed showing how hand throttle controls governor (A). Other features shown include oil level (B); crankshaft (C), with counterbalanced weights (D); crankshaft pinion (E); camshaft (F); and heavy steel cam gear (G).

Positive Lubrication

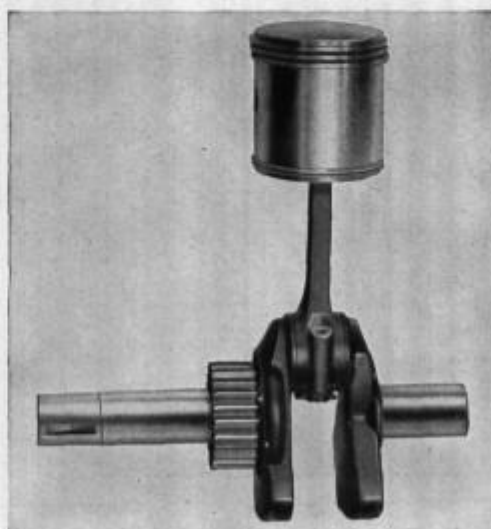
Ample and positive lubrication of all moving parts, including the valve-head mechanism, is assured when the correct amount of oil is added to the LB engine. At every turn of the governor gear, which revolves in a bath of oil, all moving parts within the crankcase are automatically oiled. An oil tube from within the crankcase carries oil to a felt wick and automatically lubricates the rocker arm bearings and valve guides.

Low Oil Consumption

One quart of oil fills the reservoir in the 1½ to 2½ hp. size, and only three pints of oil are needed in the 3 to 5 hp. engine. The oil valve acts as a gauge and shows plainly when the reservoir is full. Unique construction of the crankcase breather prevents any oil from being carried outside the engine. This, together with the use of precision-made parts, assures minimum oil consumption through the life of the engine. The close proximity of the water hopper to the oil reservoir serves to warm the oil in winter and cool it in summer, thereby assuring proper lubrication under widely varied temperatures.

Automotive Construction

The one-piece crankcase makes possible advanced automotive design and assures perfect alignment of all working parts. The crankshaft and camshaft bearings are mounted onto the crankcase and are of the removable steel-back, babbitt-lined, automotive type. Oil reservoirs over the bearings assure positive lubrication even though the engine is being operated as a portable unit and at times is not in a level position.

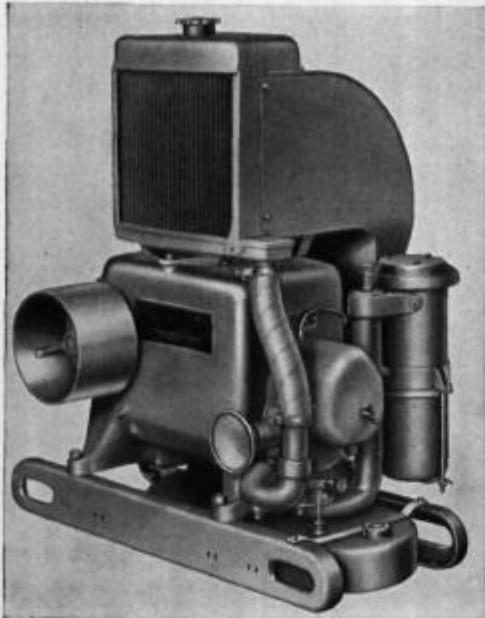


Illust. 4 — The piston is heat-treated, ground and polished to close limits. Three compression rings assure maximum power and the lower oil ring prevents waste of oil. Splash lubrication keeps the bearings thoroughly lubricated.



International Type LB Engines

(1½ to 2½ hp. and 3 to 5 hp. Sizes)



Illust. 1—The 3 to 5 hp. engine equipped with auxiliary radiator cooling, recommended for continuous heavy-duty service. The oil-type air cleaner shown is also special equipment.

Improved Cylinder Head

New and improved features have been incorporated in the cylinder head to provide more efficient operation and longer life. These include a hard-alloy valve seat insert, replaceable valve guides and valve seat, and an equalized central bearing on the valve rocker arm levers to reduce wear. In addition, all valve parts are automatically lubricated.

Smooth Flow of Power

An even flow of power is obtained by mounting the drive pulley on a gear-driven shaft. This shaft makes only one revolution to two revolutions of the crankshaft. Smooth flowing power is also assured by the design of the forged crankshaft and integral counterweights which minimizes stress and strain and avoids vibration. The steel gears are precision-machined and are extra wide.

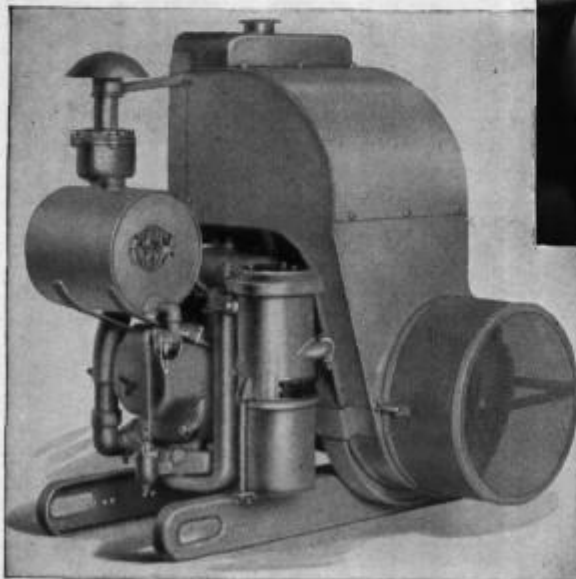
Auxiliary Radiator Cooling

The 3 to 5 hp. engine can be equipped, on special order, with an auxiliary radiator cooling system. Increased cooling capacity by means of supplementary radiator cooling, permits delivering full load performance for many hours of continuous, heavy-duty operation and assures longer life for all working parts. Simplicity of design as well as effective cooling is achieved by mounting the blower-type fan on the engine flywheel to eliminate use of a belt and extra pulleys.

The efficiency of this cooling system is shown by the small amount of water evaporated in the course of a day's operation. The radiator supplies water-holding capacity for two additional gallons of water and with effective circulation avoids frequent refills. This minimizes depositing of lime, etc., in the hopper, avoids possibility of the engine running dry, and keeps the engine at proper temperature during long hours of operation.

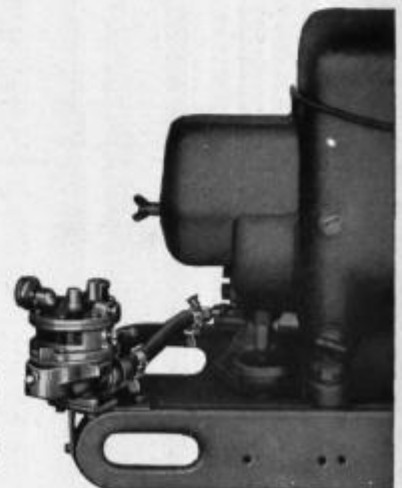


Illust. 3—The blower-type fan with vanes is mounted on the engine flywheel. It blows the air upward through the fan housing (see Illust. 2) to the radiator.



Illust. 2—This shows the 3 to 5 hp. engine equipped with auxiliary radiator system, gravity-feed fuel tank, spark arrester, and oil-type air cleaner, all of which are special equipment.

Illust. 4—A gas-burning attachment, for operating the engine on natural gas, is available for both LB engines.



INTERNATIONAL HARVESTER



Gear-Driven Pump Jacks

(For LB Engines)

- Direct-Connected to Engine.
- No Belts.
- Gears Fully Enclosed.
- Oil-Bath Lubrication.
- Pump Stroke Adjustable—5, 7½ and 10-inch stroke.
- Can Be Attached To Most Any Size Pump.
- Friction Clutch Available.
- Replaceable Bronze Bearings on Gear Shaft.

These gear-driven pump jacks are designed to give the utmost in performance and do it economically over long periods of use. They are directly connected to the engine, as shown in the accompanying illustration. Pump jacks are available with, or without, friction clutch for the 1½ to 2½ hp. engine, but with friction clutch only for the 3 to 5 hp. engine. The gear-driven feature makes it possible to operate the complete outfit in a small space and eliminates entirely the use of belts.

The drive is fully enclosed and the gears run in a constant bath of oil, thus providing smooth and quiet operation. Operating at 40 strokes per minute, the jack is driven from the camshaft on the engine, which runs at one-half the engine speed.

Pump Stroke Adjustable

There are two revolving 11-inch diameter safety ring type crank arms to which the pitman rods are attached. The two crank arms are provided with three holes for adjusting the length of the pump stroke. By attaching the pitman rods in the first hole nearest the center, a 5-inch stroke is provided; the second hole permits a 7½ inch stroke; and the outside hole provides a 10-inch stroke.

The crank gear shaft, which carries the maximum load, is equipped with replaceable bronze bearings that are constantly lubricated from the inside of the housing. Slotted holes are provided in the pitman rods making it possible to attach the jack to any size pump.

Specifications

Engine Size	Description	Net Weight (Approx.)
1½-2½ hp.	Pump jack less clutch.....	129 lb.
1½-2½ hp.	Pump jack with clutch.....	135 lb.
3-5 hp.	Pump jack with clutch.....	247 lb.

Specifications subject to change without notice.

Illust. 1 — The gear-driven pump jack is direct-connected to the LB engine.

Capacity and Horsepower Required to Operate a Tubular-Well Cylinder, 40 Upstrokes per Minute on a 10-inch Stroke

Total Elevation in Feet		40	50	75	100	125	150	175	200	250	300	350	400	450	500	550	600
Diameter Cylinder	Gallons Per Hr.	Horsepower Required															
1½ in.	154						.27	.32	.37	.45	.55	.64	.73	.82	.91	1.00	1.10
1¾ in.	250				.30	.37	.44	.52	.62	1.05	1.20	1.40	1.60	1.80	2.00	2.20	2.40
2 in.	326			.31	.41	.51	.62	.72	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75	3.00
2½ in.	510	.23	.32	.48	.64	.80	.96	1.10	1.25	2.00	2.40	2.75	3.20	3.55	3.90	4.25	4.80
3 in.	730	.35	.46	.69	.92	1.15	1.35	1.60	2.15	2.70	3.20	3.80	4.34	4.88			
3½ in.	1000	.51	.63	.94	1.25	1.55	1.85	2.15	2.85	3.60	4.30	5.00					
4 in.	1300	.66	.82	1.30	1.65	2.05	2.40	2.85	3.51								
4½ in.	1650	.80	1.00	1.50	2.05	2.60	3.10	3.60	4.38								
5 in.	2030	1.00	1.25	1.90	2.50	3.20	3.80	4.45									
6 in.	2940	1.40	1.75	2.63	3.50	4.37											
8 in.	5208	2.46	3.07	4.61													

NOTE: For every inch decrease of stroke, deduct 10 percent of table reading.



International Power Units



Illust. 1 — International Model U-2 gasoline power unit — a complete portable power plant.

International power units, both carburetor-type and Diesel models, are noted for dependable, cost-saving operation. They are engineered for heavy-duty continuous service and have a wide range of application. Scores of manufacturers who build power-operated equipment build International power units into their machines.

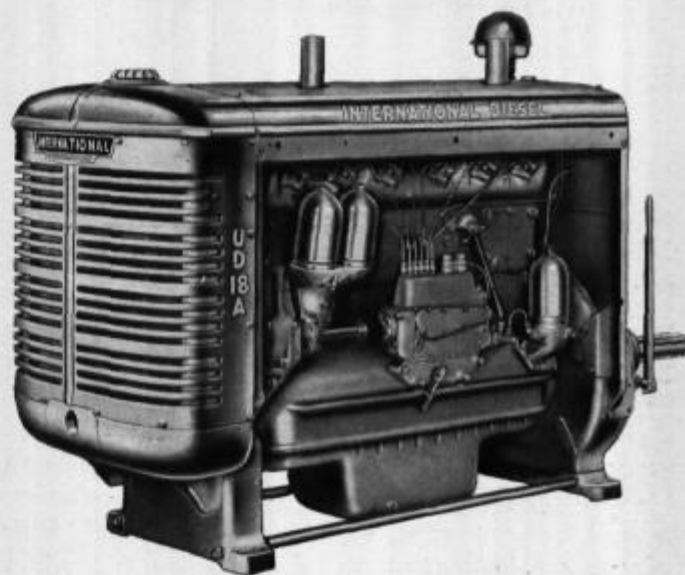
On the farm these power units pump water, drive generators, and operate many types of belt and gear-driven machines. They also operate sawmills, flour mills, cotton gins, drilling rigs, fans and blowers, compressors, ice machines, hoists, winches, power shovels, rock crushers, and similar equipment.

International carburetor-type units are available in sizes ranging from 22 to 55 maximum horsepower,

and can be equipped for operation on gasoline, natural gas, distillate, or kerosene. The Diesel models range from 39 to 125 maximum horsepower. All International Diesels have a built-in, all-weather starting system and can be started as easily as gasoline engines of comparable size.

All International units (see table below) are of the valve-in-head type and are furnished with replaceable cylinders, variable-speed governors, and other features designed to give smooth, sustaining power. These engine features are covered in detail under "General Tractor Features" (see tractor section). To fit the individual user's requirements, there is a wide selection of basic equipment and special attachments.

Curves showing horse-power, torque, and fuel consumption at various engine speeds are included in special power unit folders and the power unit catalog.



Illust. 2. — International UD-18A Diesel power unit.

	Model	Number of Cylinders	Bore and Stroke (Ins.)	Piston Displacement (Cu. Ins.)	Governed Speed R.P.M.	Maximum Torque (Lbs.-Ft.) @ R.P.M.	*Intermittent Load H.P.	**Continuous Load H.P.
Gasoline	U-2	4	3 x 4	113.1	1800	78 @ 1000	22	17.6
	U-4	4	3 3/8 x 4 1/4	152.1	1800	108 @ 1250	31.5	25.2
	U-6	4	3 7/8 x 5 1/4	247.7	1500	162 @ 900	41	32.8
	U-9	4	4.4 x 5.5	334.5	1500	227 @ 1000	55	44
Diesel	UD-6	4	3 7/8 x 5 1/4	247.7	1500	155 @ 850	39	31.2
	UD-9	4	4.4 x 5.5	334.5	1500	209 @ 800	53	42.4
	UD-14A	4	4 3/4 x 6 1/2	460.7	1400	322 @ 850	76	60.8
	UD-16	6	4.4 x 5.5	501.8	1800	330 @ 1000	100	83
	UD-18A	6	4 3/4 x 6 1/2	691.1	1600	462 @ 850	125	100
	UD-24	6	5 3/4 x 7	1090.6	1375	775 @ 800	180	144

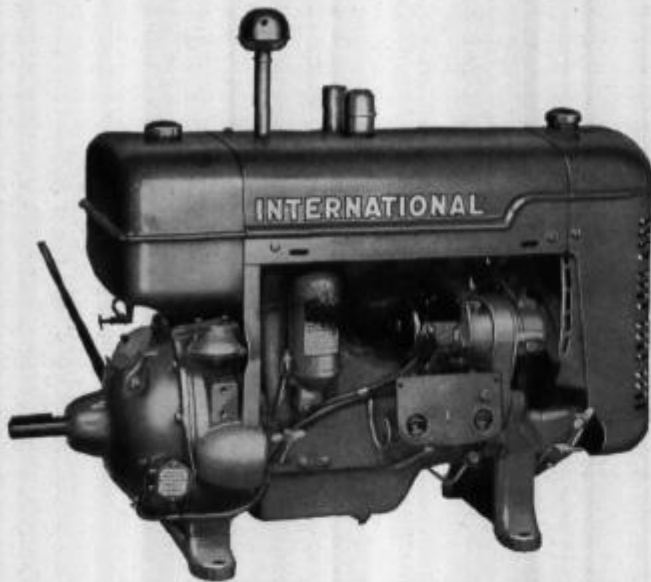
*Net maximum horsepower at normal rated governed r.p.m. of power unit complete with fan, radiator, air cleaner, and governor, determined by dynamometer test and corrected to sea level barometric pressure (29.92" of mercury) and 60° F. in accordance with standard practice. Power units were direct-connected to dynamometer and tested with fan, radiator, air cleaner, governor, clutch, and power take-off.

**Continuous load rating for complete power unit at sea level to 3000 feet altitude, gasoline units (5000 feet, Diesel units) is 80% of the intermittent load horsepower. Deduct an additional 3% for each 1000 feet of rise in altitude above 3000 feet for gasoline units, or above 5000 feet for Diesel units.



International Power Units

(Carburetor Type)



Illust. 1 — Model U-2 power unit with radiator, hood, fuel tank, clutch, power take-off, governor throttle control, special instrument panel, and automatic safety shut-off controls.

International carburetor-type power units, Models U-2, U-4, U-6, and U-9, have maximum horsepower ratings of 22, 31.5, 41, and 55 respectively. These 4-cylinder power units can be equipped for operation on gasoline, natural gas, distillate, or kerosene.

Each unit is a complete power unit fully equipped and ready to operate. For the user who intends to build one of these units into a permanent installation, each of these power unit engines can be obtained with various combinations of the basic components required for a complete power unit. An example of the number of ways in which a power unit engine may be furnished is as follows:

- Basic** 4-Cylinder engine with variable-speed governor, oil filter, gasoline carburetor and manifold, flywheel housing, and starting crank
- Add** Foot-type base
- Add** Radiator and connections
- Add** Air cleaner and connections
- Add** Engine controls
- Add** Clutch and controls
- Add** Engine hood and rear hood sheet
- Add** Fuel tank and connections
- Total** Complete power unit for gasoline.

Power unit engines with one or more of these components are illustrated on a following page.

U-2, U-4, U-6, and U-9 FEATURES

"Anti-knock" Combustion Control. Lower fuel consumption. More efficient power. Longer life.

Replaceable Cylinder Sleeves. Full-length water jackets. Efficiently cooled. Inexpensively replaced.

Valves-in-head. Accessible, efficient, dependable.

Hardened Exhaust-Valve Inserts. (Except U-2.)

Pressure Lubrication. Through drilled passages. No troublesome internal pipes. Positive lubrication to all working parts.

Oil Pump and Filter. Floating pump intake screen and replaceable element in oil filter assure circulation of clean oil.

Crankshaft Journals. Tocco-hardened. Long-life bearing surfaces.

Main and Connecting-Rod Bearings. Precision type. Quickly replaceable.

Full-floating Piston Pins. Distribute wear. Last much longer.

Water Pump. Fan-driven with full-floating shaft (special on U-2). Pump packing not affected by pull of fan belt.

Cooling System. By-pass type. Thermostatically controlled. Assures quick engine warm-up. Uniform operating temperature.

Governor. Lever adjusted, flyball type. Holds engine to selected speed.

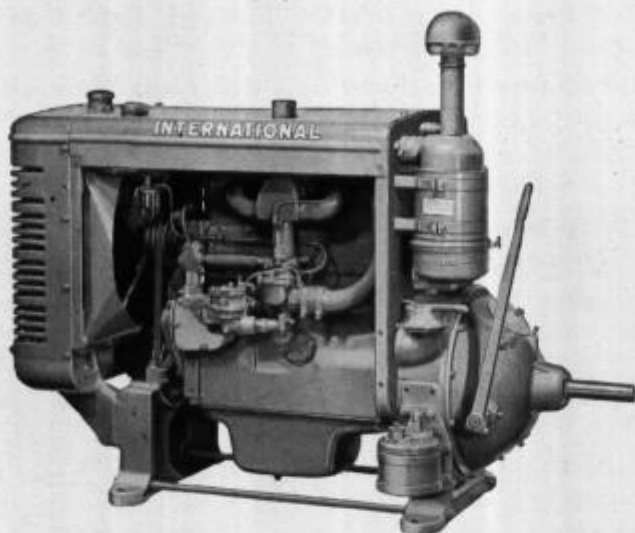


Illust. 2 — Model U-4 power unit equipped with combination gas and gasoline carburetor and top cylinder oiler.

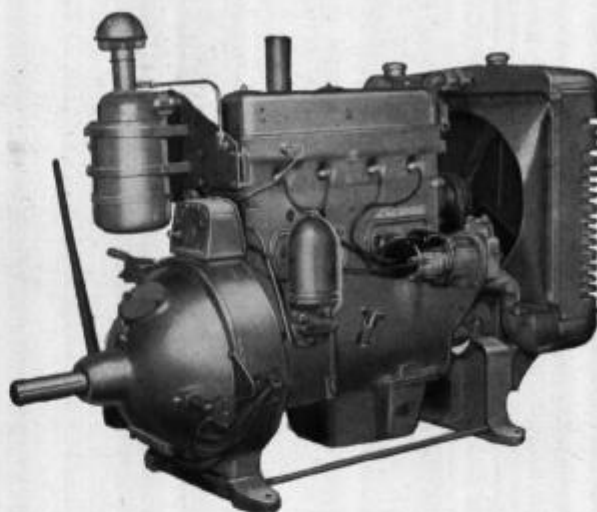


International Power Units

(Carburetor Type)



Illust. 1—Model U-6 power unit equipped with combination gas and gasoline carburetor and top cylinder oiler.



Illust. 2—Model U-9 open-type power unit with combination gas and gasoline fuel equipment. The automatic safety engine shut-off controls for high water-temperature and low oil-pressure are special equipment.

Model U-2. The same basic engine that powers Farmall-A and B tractors. Develops 22 net hp. on gasoline at regular governed speed of 1800 r.p.m.*

Work it will do: Operates 7½-kw. generator; grinds 1500 lb. of shelled corn per hr. with hammer mill; pumps 300 gal. of water per min. against 100-ft. total head; gives 4500 to 5000 lb. of line pull at drum of hoist or winch at line speed of 100 ft. per min.

Model U-4. The same basic engine that powers Farmall-H, W-4 standard farm tractor, O-4 orchard and grove tractor, and I-4 industrial tractor. Develops 31.5 max. hp. on gasoline at 1800 r.p.m.*

Work it will do: Operates 15-kw. generator; grinds 2500 lb. of shelled corn per hr. with hammer mill; pumps 500 gal. of water per min. against 100-ft. total head; crushes 11 to 21 tons of stone per hr. to 1½ in. size operating 9 x 20 jaw crusher; operates sawmill that cuts 3000 to 6000 board ft. of lumber per 10-hr. day; gives 8000 lb. of line pull at drum of hoist or winch at line speed of 100 ft. per min.

Model U-6. The same basic engine that powers Farmall-M, W-6 standard farm tractor, I-6 industrial tractor, O-6 orchard tractor, and T-6 crawler tractor. Develops 41 max. hp. on gasoline at 1500 r.p.m.*

Work it will do: Operates 20-kw. generator; grinds 4500 lb. of shelled corn per hr. with hammer mill; pumps 720 gal. of water per min. against 100-ft. total head; furnishes sufficient power for flour mill with 60-barrel capacity per 24 hrs.; gives 10,000 lb. of line pull at drum of hoist or winch at line speed of 100 ft. per min.; operates ¾-yd. shovel, crushes 13 to 24 tons of stone per hr. to 1½-in. size operating 9 x 24 jaw crusher; operates sawmill that cuts 5000 to 8000 board ft. of lumber per 10-hr. day.

Model U-9. The same basic engine that powers W-9 standard farm tractor, I-9 industrial tractor, and T-9 crawler tractor. Develops 55 max. hp. on gasoline at 1500 r.p.m.*

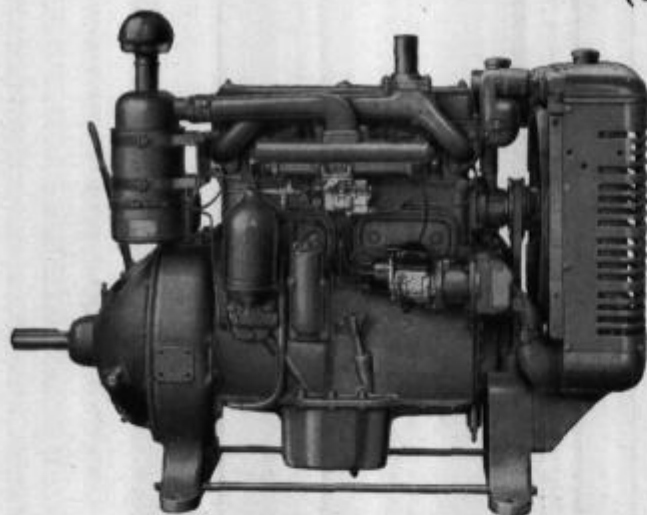
Work it will do: Operates 25-kw. generator; grinds 5000 lb. of shelled corn per hr. with hammer mill; pumps 850 gal. of water per min. against 100-ft. total head; furnishes sufficient power for flour mill with 80-barrel capacity per 24 hrs.; crushes 15 to 27 tons of stone per hr. to 1½-in. size operating 12 x 24-in. jaw crusher; operates sawmill that cuts 5000 to 11,000 board ft. of lumber per 10-hr. day; gives 11,500 to 12,500 lb. of line pull at drum of hoist or winch at line speed of 100 ft. per min.; operates ½-yd. power shovel.

*Equipment for operation on gas, distillate, and kerosene is available. Also close-regulating governor for 1200 r.p.m. operation as required for generator service. Comparative specifications are shown on following page.



International Power Units

(Diesel)



Illust. 1 — Model UD-6 open-type power unit. Prominently shown is the all-weather starting system.

Models UD-6, UD-9, UD-14A, UD-16, UD-18A, and UD-24 offer a choice of Diesel engines ranging from 39 to 180 rated maximum horsepower. They are complete, fully equipped, and ready to operate. Each one can be furnished as a stripped engine or with any combination of basic parts to suit the purchaser's individual requirements. This flexibility in the selection of power appeals to users who want only certain equipment for a given operation or use. The various ways International Diesels may be obtained are as follows:

Diesel Power Unit Components

<i>Basic</i>	Diesel engine with variable-speed governor, oil filter, injection pump, all-weather starting system, flywheel housing, and starting crank.
<i>Add</i>	Foot-type base
<i>Add</i>	Radiator and connections
<i>Add</i>	Air cleaner and connections
<i>Add</i>	Instrument panel and engine controls
<i>Add</i>	Clutch and controls
<i>Add</i>	Engine hood and rear hood sheet
<i>Add</i>	Diesel fuel transfer pump, intermediate Diesel fuel tank, starting gasoline tank and complete connections
<i>Total</i>	Complete Diesel power unit.

UD-6, UD-9, UD-14A, UD-16, UD-18A, and UD-24 FEATURES

Advanced Design Fuel Injection. Provides maximum fuel economy and power output.

Simplified, Dependable Starting. As easy to start and operate as a gasoline engine.

4-Cycle, Valve-in-Head Design. Built for heavy-duty work.

Long-Life Cylinders with Full-Length Jackets. May be replaced inexpensively when worn after long use.

Full-Pressure Lubrication Through Drilled Passages. Positive lubrication of all working parts.

Oil Pump with Floating Oil Screen. Only clean oil, above sediment level, is pumped.

Tocco-Hardened Crankshaft. Hard bearing surfaces for long life.

Heavy-Duty Precision Bearings. Replaceable type of generous size for long life.

By-pass Type, Thermostatically Controlled Cooling. Assures quick engine warm-up and uniform operating temperature.

Full-Floating Water Pump Shaft. Relieves pump shaft of any fan or fan-belt load.

Full-Floating Piston Pins. Distribute wear, resulting in longer life.

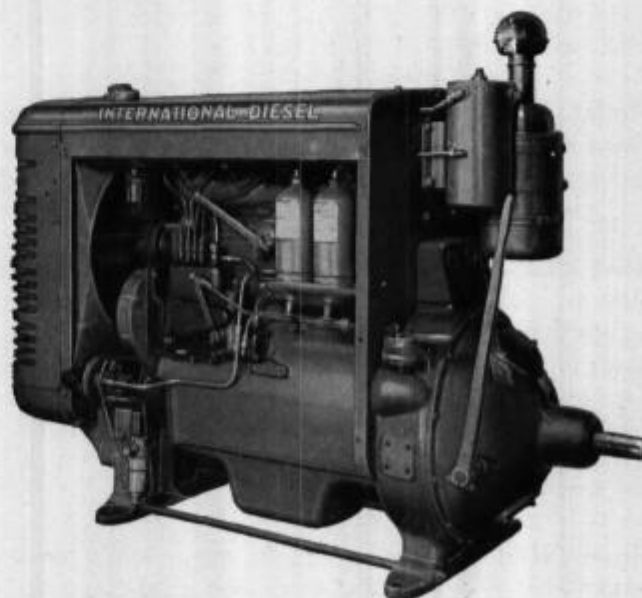
Variable-Speed Governor. Holds engine speed at any r.p.m. operator selects, from low idling to rated governor speed.

Large-Diameter Flywheel. Combined with sensitive governor, helps maintain uniform engine speed under variable load conditions.

Large-Capacity, Oil-Bath-Type Air Cleaner. Assures clean air—highly important to Diesel engine life.

Renewable Element Oil Filters. Keep oil clean and extend time between drains.

Equipment Combinations. Meet wide variety of requirements.

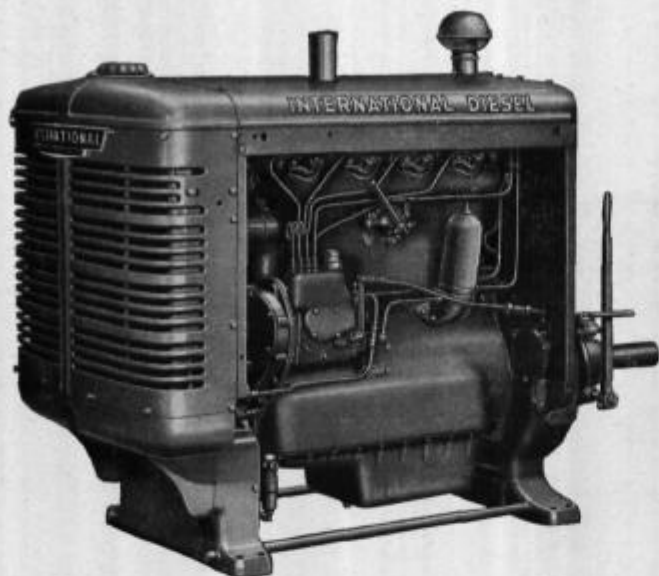


Illust. 2 — Model UD-9 complete Diesel power unit showing fuel supply system.

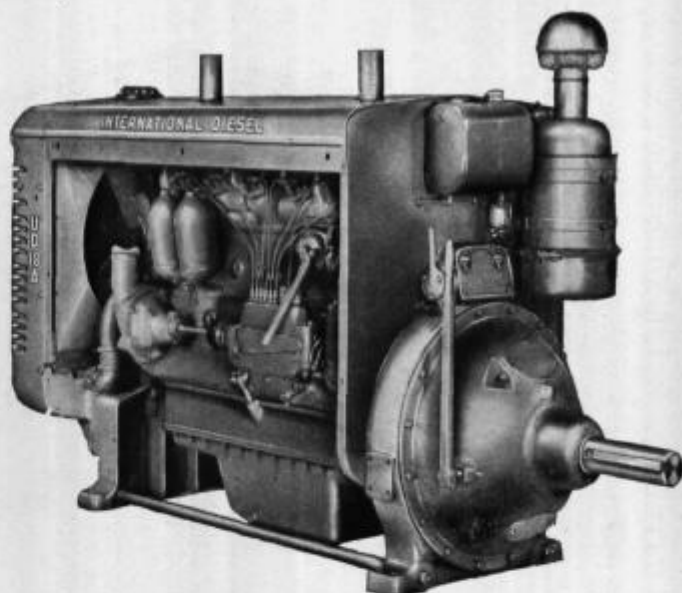


International Power Units

(Diesel)



Illust. 1 — UD-14A Power Unit.



Illust. 2 — UD-18A Power Unit.

Model UD-6. The same basic engine that powers the Farmall-MD, WD-6 standard farm tractor, ID-6 industrial tractor, and TD-6 crawler tractor. Develops 39 Max. hp. at 1500 r.p.m.

Work it will do: Operates 20-kw. generator; grinds 4500 lb. of shelled corn per hr. with hammer mill; furnishes sufficient power for flour mill with 60-barrel capacity per 24 hrs.; pumps 720 gal. of water per min. against 100-ft. total head; operates sawmill that cuts 5000 to 8000 board ft. of lumber per 10-hr. day; crushes 13 to 24 tons of stone per hr. to 1½-in. size operating 9 x 24-in. jaw crusher; gives 10,000 lb. of line pull at drum of hoist or winch at line speed of 100 ft. per min.

Model UD-9. The same basic engine that powers the WD-9 standard farm tractor, ID-9 industrial tractor, and TD-9 crawler tractor. Develops 53 Max. hp. at 1500 r.p.m.

Work it will do: Operates 25-kw. generator; grinds 5000 lb. of shelled corn per hr. with hammer mill; pumps 850 gal. of water per min. against 100-ft. total head; furnishes sufficient power for flour mill with 80-barrel capacity per 24 hrs.; crushes 15 to 27 tons of stone per hour to 1½-in. size operating 12 x 24 jaw crusher; operates sawmill that cuts 5000 to 11,000 board ft. of lumber per 10-hr. day; gives 11,500 to

12,500 lb. of line pull at drum of hoist or winch at line speed of 100 ft. per min.

Model UD-14A. The same basic engine that powers the medium-heavy Diesel crawler tractors. Develops 76 max. hp. at 1400 r.p.m.

Work it will do: Operates 35-kw. generator; operates 2-stand, 80-saw cotton gin; pumps 1000 gallons of water per min., operating pump with 100-ft. total head; furnishes sufficient power for flour mill with 95-barrel capacity per 24 hrs.; crushes 22 to 40 tons of stone per hr. to 1½-in. size operating 15 x 36 jaw crusher; operates sawmill that cuts 7000 to 14,000 board ft. of lumber per 10-hr. day; gives 14,000 to 15,000 lb. of line pull at drum of hoist or winch at line speed of 100 ft. per min.

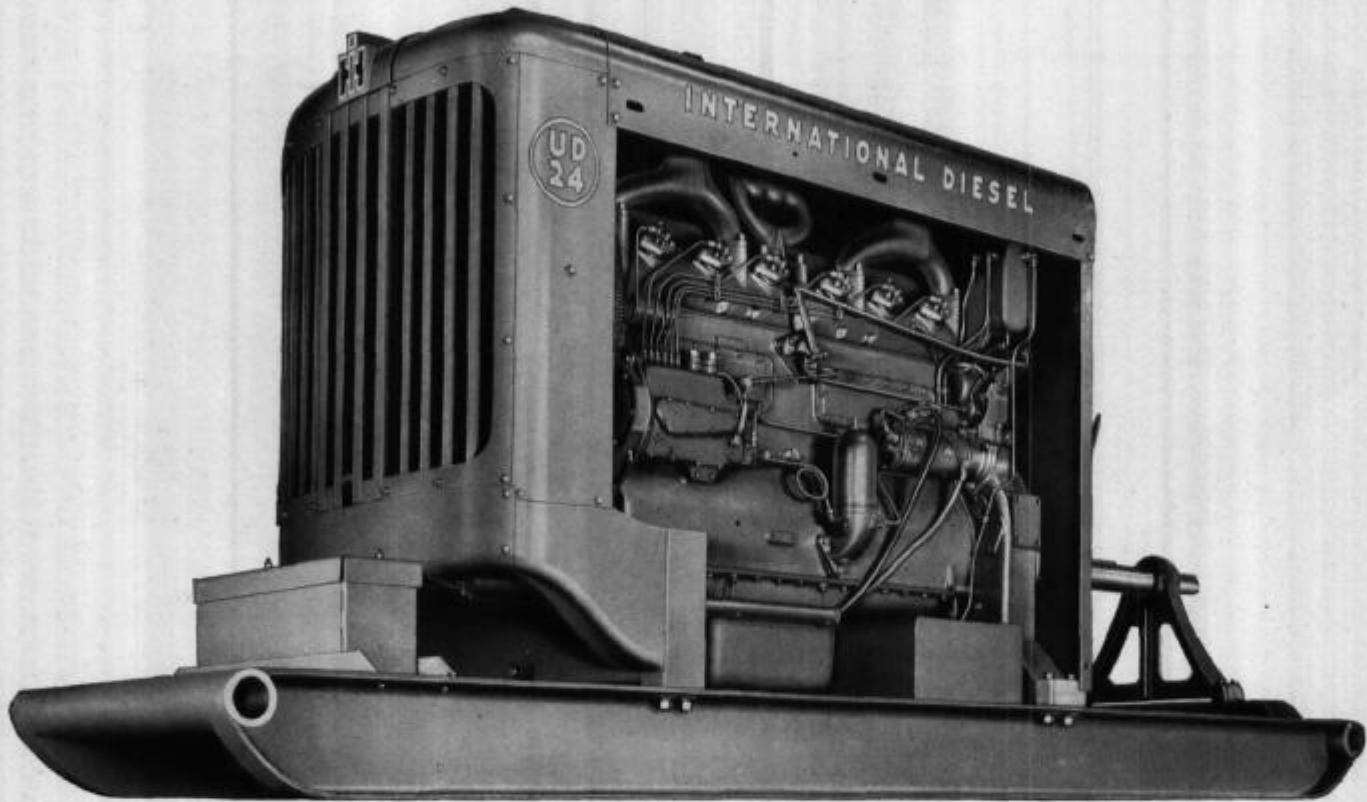
Model UD-18A. The same basic engine that powers the heavy Diesel crawler tractors. Develops 125 max. hp. at 1600 r.p.m.

Work it will do: Operates 60-kw. generator; pumps 1600 gal. of water per min. against 100-ft. total head; operates 3-stand, 80-saw cotton gin; furnishes sufficient power for flour mill with 150-barrel capacity per 24 hrs.; operates sawmill that cuts 11,000 to 22,000 board ft. of lumber per 10-hr. day; gives 20,000 to 25,000 lb. of line pull at drum of hoist or winch at line speed of 100 ft. per min.



International Power Units

(Diesel)



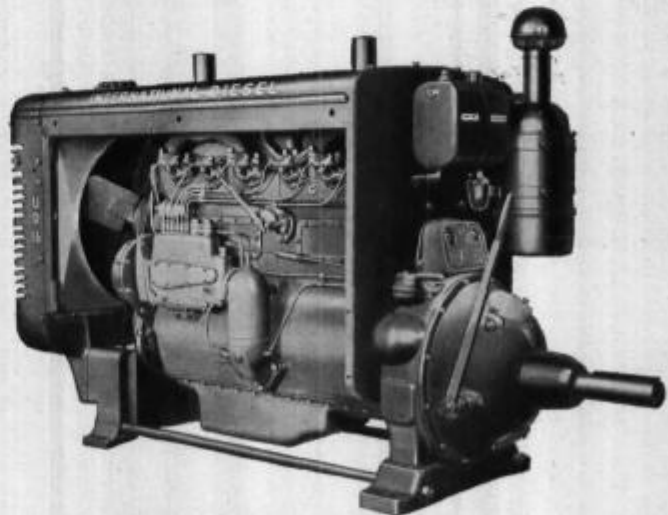
Illust. 1 — Model UD-24 Power Unit.

Model UD-24 — A new powerful Diesel, the largest built by International Harvester. Develops 180 max. hp. at 1375 r.p.m.

Work it will do: Operates 90-kw. generator; pumps 2800 gal. of water per min. against 100-ft. total head; furnishes sufficient power for flour mill with 280-barrel capacity per 24 hrs.; crushes 110 to 450 tons of stone per hour to 3-8-in. size operating 30 x 42 jaw crusher; operates sawmill that cuts 16,000 to 28,000 board ft. of lumber per 8-hr. day; gives 40,000 lb. of line pull at drum of hoist or winch at line speed of 100-ft. per min.; operates 5-stand, 80-saw cotton gin; operates ice machine producing 80 approximate standard tons of refrigeration per 24 hours.

Model UD-16 — A new engine that develops 100 max. hp. at 1800 r.p.m.

Work it will do: Operates 50-kw. generator; pumps 1600 gal. of water per min. against 100-ft. total head; furnishes sufficient power for flour mill with 150-barrel capacity per 24 hrs.; crushes 60 to 160 tons of stone per hour to 3-6-in. size operating 20 x 36 jaw crusher; operates sawmill that cuts 9600 to 16,000 board ft. of



Illust. 2 — Model UD-16 power unit.

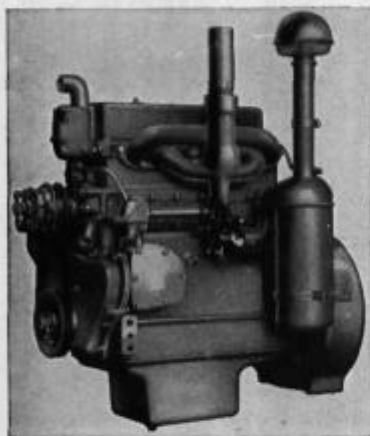
lumber per 8-hr. day; gives 24,000 lb. of line pull at drum of hoist or winch at line speed of 100-ft. per. min.; operates ice machine producing 40 approximate standard tons of refrigeration per 24 hours; operates 3-stand, 70-saw cotton gin.



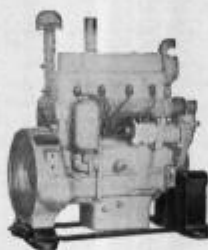
International Power Units

Power Units Can Be Ordered With Basic Equipment for Individual Needs

Power unit engines can be ordered with any combination of power unit components to meet the particular needs of the customer. The manner in which a power unit engine may be built up with various components from a basic engine to a complete power unit is illustrated below. A U-4 unit is shown; the manner of building up other models is similar.



Illust. 1 (Left) — The basic engine. (Regular engine equipment varies with the model selected.)



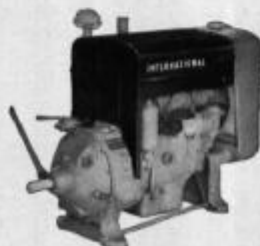
Illust. 2 — This is the basic unit plus the heavy-duty, foot-type base which provides a firm foundation and low center of gravity.



Illust. 3 — Same as unit in Illust. 2, plus engine speed controls. Standardized fly-wheel and housing permit mounting various types of clutches, reduction gears, and stub shaft for direct-connected machines.



Illust. 4 — Same as unit in Illust. 3, plus radiator, clutch, and power take-off. Overcenter heavy-duty clutch or spring-loaded clutch is available.



Illust. 5 — Same as unit in Illust. 4, plus engine hood and rear-hood sheet—a complete power unit less fuel tank.



Illust. 6 — Same as unit in Illust. 5, plus fuel tank—a complete, independent, portable power plant.

Special Attachments for Job Requirements and for Operating Convenience

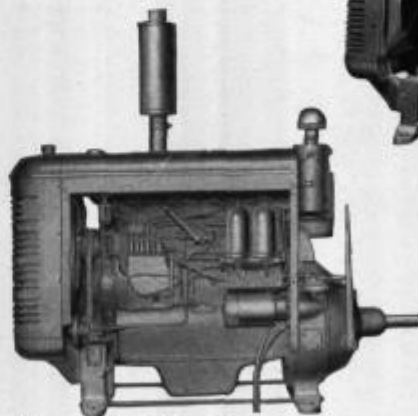
The following power unit attachments are available to meet special requirements. (Data sheets giving dimensional and other details of stub shafts, extended power take-off shafts with outboard bearings, sub-bases, gear reductions, flat belt pulleys, and transmissions, are available.)

Available Attachments

- | | |
|--|--|
| Electric Starting | Fuel pump for U-2 and U-4 |
| **Hour meter | Water pump and thermostat for U-2 |
| *Combination gas and gasoline fuel equipment | Clutch, spring-loaded type |
| *Gasoline-distillate fuel equipment | Transmissions |
| *High-altitude pistons | Gear reductions |
| *Top cylinder oiler for use with special gas fuel equipment | Stub shaft for direct-connected machines |
| Automatic safety shut-off controls for excessive water temperatures and low oil pressure | Extended shaft with outboard bearing (except U-2 and U-4) |
| Muffler | Welded structural steel sub-base (except U-2 and U-4) for use with extended shaft and outboard bearing |
| Spark arrester | Hood side doors |
| Reverse-flow fan | Radiator shutter |
| Governor springs for close speed regulation as required for generator service | Slide rails and belt tighteners |

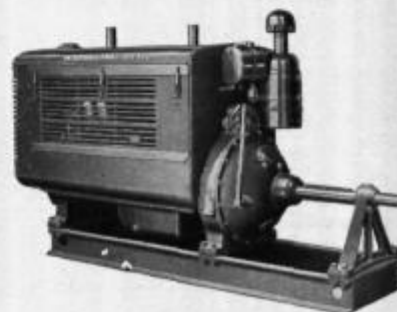
**Not available for U-2, U-4 and U-6 gasoline units.
*For carburetor-type power units only.

Illust. 7 (Right) — Left side view of Model U-6 power unit equipped with combination gas and gasoline fuel equipment, automatic safety shut-off controls for excessive water temperature and low oil pressure, and top cylinder oiler. Clutch control lever can be mounted on either side. Similar special equipment is available for all carburetor-type units.



Illust. 8 (Left) — Electric starting and muffler are available as extra equipment for all power units. This illustration shows the UD-9 Diesel power unit equipped with these attachments.

Illust. 9 (Right) — View of Model UD-18A Diesel power unit equipped with hood side doors, extended shaft and outboard bearing, and welded structural steel sub-base. Hood side doors are available for all sizes of power units and outboard bearings and sub-bases are available for the "6" series and larger sizes.



International Carburetor Type Power Units

	U-2	U-4	U-6	U-9
Horsepower (full equip.) @ r.p.m. (a)				
Maximum hp. @ 2,000 r.p.m.	23			
80% Max. hp. @ 2,000 r.p.m.	18.4			
Maximum hp. @ 1,800 r.p.m.	22	31.5	42.8	
80% Max. hp. @ 1,800 r.p.m.	17.6	25.2	34.2	
Maximum hp. @ 1,600 r.p.m.	20.8	30.5	41.8	
80% Max. hp. @ 1,600 r.p.m.	16.6	24.4	33.4	
Maximum hp. @ 1,500 r.p.m.	20.2	29.6	41	55
80% Max. hp. @ 1,500 r.p.m.	16.1	23.7	32.8	44
Maximum hp. @ 1,400 r.p.m.	19.3	28.5	39.5	53.5
80% Max. hp. @ 1,400 r.p.m.	15.4	22.8	31.6	42.8
Maximum hp. @ 1,200 r.p.m.	17.3	24.8	35.6	50
80% Max. hp. @ 1,200 r.p.m.	13.8	19.8	28.5	40
Maximum hp. @ 900 r.p.m.	13.3	17.6	27.6	39
80% Max. hp. @ 900 r.p.m.	10.6	14	22	31.2
Regular full load governed r.p.m.	1,800	1,800	1,500	1,500
Maximum torque @ r.p.m., ft. lb.	78 @ 1000	108 @ 1250	162 @ 900	227 @ 1000

(a) Corrected to 60° F. at sea level (barometric pressure, 29.92 in. Hg.). The figures shown in bold type indicate the maximum horsepower developed at regular full load governed r.p.m. for complete power unit with radiator, fan, air cleaner, clutch, and governor. For intermittent load at sea level, use of 90% of maximum power shown will allow for lower than standard barometric pressure, higher temperatures, and other variations in operating conditions. The continuous load rating at 80% of maximum horsepower is shown above. All power units are regularly equipped with variable speed type governors, making it possible to operate under governor control at speeds less than the regular full load governed r.p.m. For close speed regulation, as required for generator service, special governor springs are available.

Engine, Valve-in-head	(b) gasoline	(b) gasoline	(b) gasoline	(b) gasoline
Regular fuel equipment	4	4	4	4
Number of cylinders	3 x 4	3½ x 4¼	3½ x 5¼	4.4 x 5.5
Bore and stroke, in.	113.1	152.1	247.7	334.5
Piston displacement, cu. in.	1,200	1,275	1,313	1,375
Piston speed, f.p.m. @ rated r.p.m.	3	3	3	3
Number compression rings per piston	1	1	1	2
Number oil rings per piston	2½	2½	2¾	3¼
Diameter crankshaft bearings, in.	3	3	3	3
Number of crankshaft bearings	thermo.	pump	pump	pump
Cooling system type	magneto	magneto	magneto	magneto
Ignition system, regular				

(b) Natural gas and distillate fuel equipment also is available for all carburetor type power units.

Clutch and Standard Power Take-off	9	10	11	12
Diameter, in.	186	246	358	502
Maximum torque capacity, ft. lb.	4	4	2	1
Flywheel housing, S.A.E. No.	1-plate	1-plate	1-plate	1-plate
Type (overcenter)	1.4375-1.4365	1.4375-1.4365	1.750-1.749	2.250-2.249
P.T.O. shaft diameter, in.	4	4	6	6½
Length, in.	¾ x ¾ x 3	¾ x ¾ x 3	½ x ½ x 5	¾ x ¾ x 5¾
Shaft key, in.				

Radiator (fin and flat tube)				
Frontal area, sq. in.	259	275	424	528
Radiation area, sq. in.	8,240	13,030	19,300	24,065

Capacities (U. S. Gal.)				
Fuel tank	7	9½	(c)	(c)
Engine lubricating oil system	1¼	1½	2	2¾
Cooling system	3¾	4½	9½	12

(c) Equipped with transfer pump.

Overall dimensions and weight (d)				
Length, in.	50 ¹¹ / ₁₆	54¾	62 ⁹ / ₁₆	67¾
Width, in.	21¾	23 ⁷ / ₁₆	26¾	27 ¹⁵ / ₁₆
Height, in.	40¾	40 ⁹ / ₁₆	50¾	51
Approximate weight, lb.	675	960	1,445	1,760

(d) Dimensions and weights include radiator, hood, clutch, power take-off, and base, but not starting crank or belt pulley. Dimensions also include governor lever in shut-off position.

Specifications subject to change without notice.



International Diesel Power Units

	UD-6	UD-9	UD-14A	UD-16	UD-18A	UD-24
Horsepower (full equip.) @ r.p.m. (a)						
Maximum hp. @ 1,800 r.p.m.				100		
80% Max. hp. @ 1,800 r.p.m.				80		
Maximum hp. @ 1,600 r.p.m.				94	125	
80% Max. hp. @ 1,600 r.p.m.				75.2	100	
Maximum hp. @ 1,500 r.p.m.	39	53		90	120	
80% Max. hp. @ 1,500 r.p.m.	31.2	42.4		72	96	
Maximum hp. @ 1,400 r.p.m.	37.5	50.8	76	85.5	115	180 (aa)
80% Max. hp. @ 1,400 r.p.m.	30	40.6	60.8	68.4	92	144 (aa)
Maximum hp. @ 1,200 r.p.m.	33.8	45.5	70	75	103	164
80% Max. hp. @ 1,200 r.p.m.	27	36.4	56	60	82.4	131.2
Maximum hp. @ 900 r.p.m.	26.2	35.5	55	56	79.5	132
80% Max. hp. @ 900 r.p.m.	21	28.4	44	44.8	63.6	105.6
Regular full load governed r.p.m.	1,500	1,500	1,400	1,800	1,600	1,375
Maximum torque @ r.p.m., ft. lb.	155 @ 850	209 @ 800	322 @ 850	330 @ 1,000	462 @ 850	775 @ 800

(a) Corrected to 60° F. at sea level (barometric pressure, 29.92 in. Hg.). The figures shown in bold type indicate the intermittent load horsepower rating for complete power unit with radiator, fan, air cleaner, clutch and with regular factory injection pump setting. The continuous load rating at 80% of intermittent horsepower is shown above. All power units are regularly equipped with variable speed type governors, making it possible to operate under governor control at speeds less than the regular full load governed r.p.m. For close speed regulation, as required for generator service, special governor springs are available.

(aa) At 1,375 governed r.p.m.

Engine, Valve-in-head

	Diesel	Diesel	Diesel	Diesel	Diesel	Diesel
Regular fuel equipment	4	4	4	6	6	6
Number of cylinders	4	4	4	6	6	6
Bore and stroke, in.	3 7/8 x 5 1/4	4.4 x 5.5	4 3/4 x 6 1/2	4.4 x 5.5	4 3/4 x 6 1/2	5 3/4 x 7
Piston displacement, cu. in.	247.7	334.5	460.7	501.8	696.1	1,090.6
Piston speed, f.p.m. @ rated r.p.m.	1,313	1,375	1,516.6	1,650	1,733	1,604
Number compression rings per piston	3	3	4	3	4	3
Number oil rings per piston	2	2	2	2	2	2
Diameter crankshaft bearings, in.	3 3/4	4 1/8	3 1/4	3 3/8	3 1/2	4 1/8
Number of crankshaft bearings	5	5	5	7	7	7
Cooling system type	pump	pump	pump	pump	pump	pump
Ignition system, regular	compres.	compres.	compres.	compres.	compres.	compres.

Clutch and Standard Power Take-Off

	11	12	14	15	17	14
Diameter, in.	11	12	14	15	17	14
Maximum torque capacity, ft. lb.	358	502	792	1,049	1,487	1,581
Flywheel housing, S.A.E. No.	2	1	1	1	0	0
Type (over center)	1-plate	1-plate	1-plate	1-plate	1-plate	2-plate
P.T.O. shaft diameter, in.	1.750-1.749	2.250-2.249	3.000-2.999	3.000-2.999	3.500-3.498	3.500-3.498
P.T.O. shaft length, in.	6	6 1/2	8 1/2	8 1/2	10	10
Shaft key, in.	1/2 x 1/2 x 5	5/8 x 5/8 x 5 3/8	3/4 x 3/4 x 7 1/8	3/4 x 3/4 x 7 1/8	7/8 x 7/8 x 8 1/4	7/8 x 7/8 x 8 1/4

Radiator (fin and flat tube)

	424	528	681	681	818	1,212
Frontal area, sq. in.	424	528	681	681	818	1,212
Radiation area, sq. in.	19,300	24,065	34,930	34,930	41,050	65,260

Capacities (U.S. Gal.)

	(b)	(b)	(b)	(b)	(b)	(b)
Fuel tank	(b)	(b)	(b)	(b)	(b)	(b)
Engine lubricating oil system	2 3/4	2 3/4	4	4 1/2	6 1/2	7
Cooling system	10 1/2	13	17	20	27	37

(b) Equipped with transfer pump and intermediate 1/8-gal. tank.

Overall dimensions and weight (c)

	62 9/16	67 3/4	78	88 1/8	95 3/8	107 9/16
Length, in.	62 9/16	67 3/4	78	88 1/8	95 3/8	107 9/16
Width, in.	26 9/16	28 1/16	33 1/8	33 1/8	35 3/8	44
Height, in.	50 1/4	52	56 1/2	55 5/16	59 3/4	64
Approximate weight, lb.	1,740	2,045	2,650	3,040	4,000	5,675

(c) Dimensions and weights include radiator, hood, clutch, power take-off, and base, but not starting crank or belt pulley. Dimensions also include governor lever in shut-off position.

Specifications subject to change without notice.



INTERNATIONAL HARVESTER





DAIRY EQUIPMENT

Section 18

Cream Separators:

	<i>Page</i>
No. 2-S.....	460-465
No. 3-S.....	460-465
No. 4-S.....	460-465
No. 5-S.....	460-465
Separator oil.....	465

Milkers:

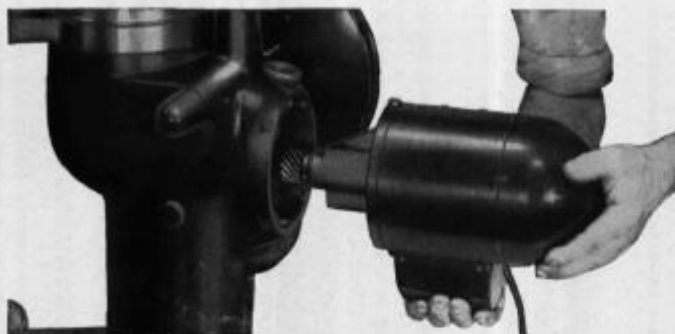
Single and double units.....	466-468
Vacuum pumps.....	469-470

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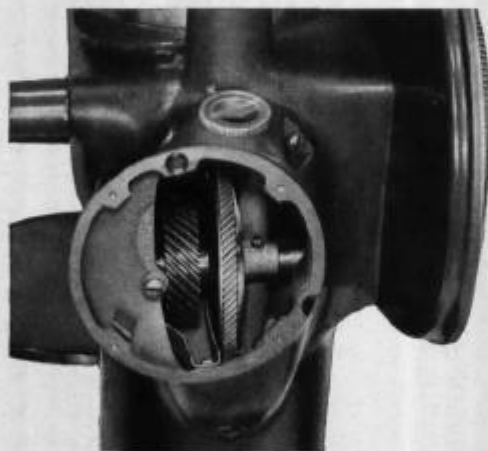


"S" Series Cream Separators

(Electric Drive)



Illust. 1—Motor assembly, showing drive gear and shaft with extended bearing support. This direct electric drive, supplied for all sizes of cream separators (both standard and low base), is especially designed for heavy and continuous service. The motor is designed to provide maximum turning power with low starting amperage. This lessens undesirable dimming of lights when starting the motor. The electric drive can be supplied either with the cream separator or as an attachment.



Illust. 2—Rear view of the spindle drive, showing the clutch gear assembly with oil pan reservoir. Quick, positive starting is assured by the large contact surface of the clutch with the spindle drive gear.



Illust. 3—Low base cream separators are supplied, on special order, for either electric motor or power drive. The low base units are seven inches lower than standard models. The height from floor to top of supply can is only 41½ inches for the Nos. 4-S and 5-S.

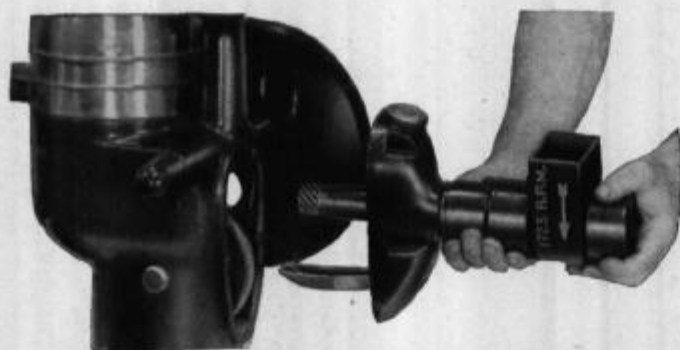
Direct Electric Drive Attachments

Cream Separator Model	H.P.	Volts	Cycle	R.P.M.	Current
Nos. 2-S or 3-S.....	1/8	115	60	1725	AC
Nos. 2-S or 3-S.....	1/8	115	25	1425	AC
Nos. 4-S or 5-S.....	1/4	115	60	1725	AC
Nos. 4-S or 5-S.....	1/4	115	25	1425	AC
Nos. 2-S or 3-S.....	1/8	32	..	1725	DC
Nos. 2-S or 3-S.....	1/8	115	..	1725	DC
Nos. 4-S or 5-S.....	1/4	32	..	1725	DC
Nos. 4-S or 5-S.....	1/4	115	..	1725	DC
Nos. 2-S or 3-S.....	1/8	230	60	1725	AC
Nos. 4-S or 5-S.....	1/4	230	60	1725	AC
Nos. 2-S or 3-S.....	1/8	115	50	1425	AC
Nos. 4-S or 5-S.....	1/4	115	50	1425	AC
Nos. 2-S or 3-S.....	1/8	230	50	1425	AC
Nos. 4-S or 5-S.....	1/4	230	50	1425	AC
Nos. 2-S or 3-S.....	1/8	230	25	1425	AC
Nos. 4-S or 5-S.....	1/4	230	25	1425	AC



"S" Series Cream Separators

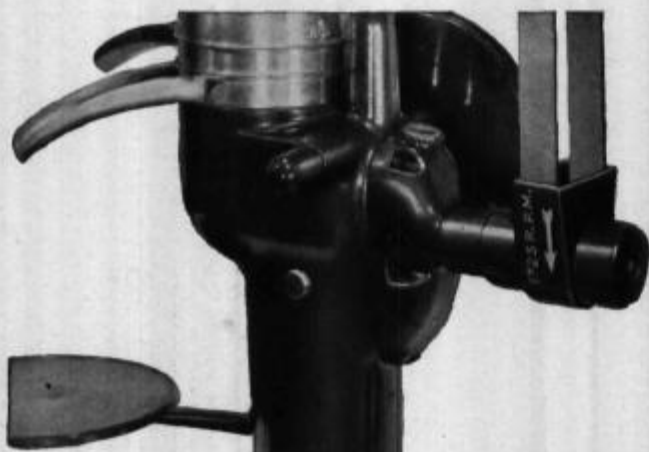
(Belt Drive)



Illust. 1 — Self-oiling belt power drive with extended bearing support and large drive gear. The belt power drive is equipped with both a tight and a loose pulley.



Illust. 2 — The clutch gear assembly is mounted with the spindle drive gear on the pinion shaft. A spiral cam, integral with the clutch gear, helps to absorb the starting shock and provides both a positive start and release as it thrusts the clutch into engagement with the clutch surface of the spindle drive gear.



Illust. 3 — Belt power operates a $2\frac{1}{2}$ -inch tight pulley at 1,725 r.p.m. The belt drive can be adjusted to take power from any position at right angles to the drive shaft, either directly from an engine or from a line shaft.



Illust. 4 — Cream separator shown equipped with belt power drive attachment.

Belt-Power Drive

The belt power attachment does not interfere with hand operation nor does the crank swing when the separator is in operation. A direct connection is made without requiring a speed-reducing gear and the separator operates at a constant, uniform speed. Over-size gears are used to actuate the spindle drive gear. Lubrication is assured by the clutch gear dipping in the oil reservoir pan beneath the clutch gear. An extended end bearing supports the drive shaft in a rigid position for smooth starting and keeps the drive gear properly aligned with the clutch gear at all times. Both front and rear shaft bearings are lubricated automatically from the cream separator gearcase.



Illust. 5 — Power-drive attachment showing belt running on the loose pulley. This disconnects the power to the separator without stopping the line shaft. The belt shifter and guard are in one casting and no speed-reducing gear is required.

"S" Series Cream Separator

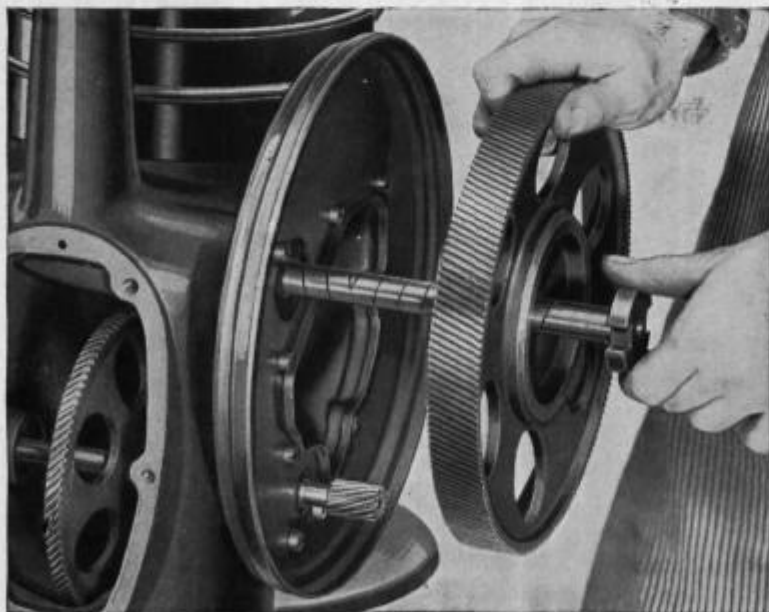
(Features)



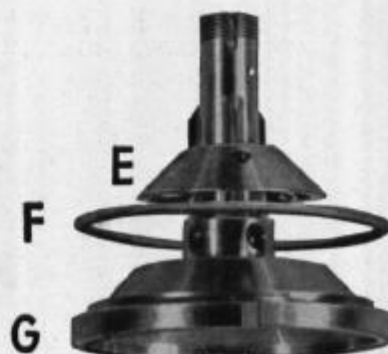
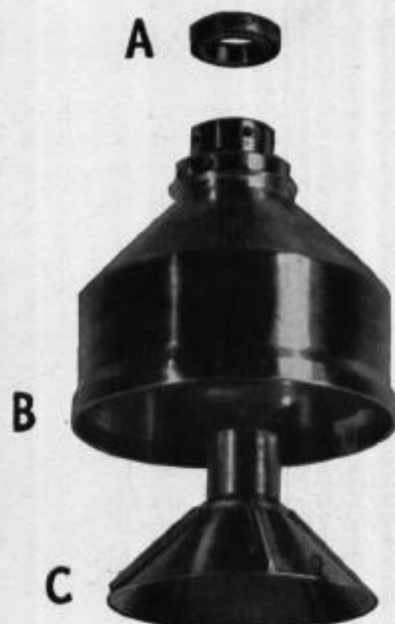
Illust. 1— There are two skim milk outlets provided on the bowl, each of which is adjustable. By controlling the volume of skim milk escaping from these outlets it is possible to establish the ratio of discharge from the cream outlets and thus fix the percentage of butterfat in the cream. The greater amount of skim milk that is allowed to escape, the smaller is the quantity of cream, and, consequently, the percentage of butterfat in the cream is greater.



Illust. 2— The double transfer wash rod makes it easy to remove the discs for washing and prevents binding of the discs when lifting up and down in the water. The wash rod locks into the extra-heavy bottom disc with a one-quarter turn. Edges of the stainless steel discs are honed smooth so there are no sharp edges to cut fingers while handling discs. The discs are non-rusting and easy to keep clean.



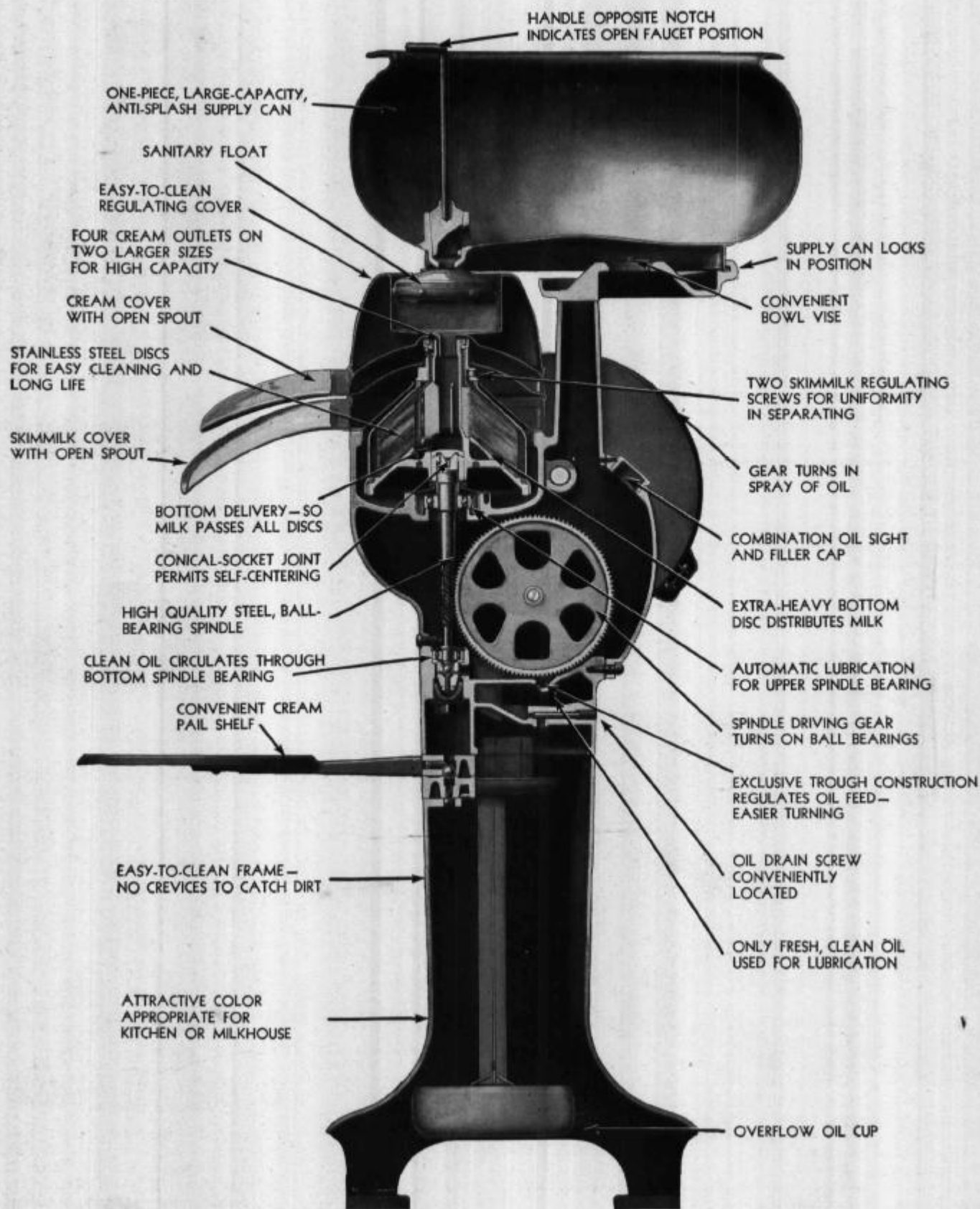
Illust. 3— Assembly of the sturdy, quiet-operating, main driving gear and crankshaft. Note oil grooves for lubrication. The spindle driving gear is shown within the frame. The main gear revolves in a spray of oil. At each end of the pinion shaft, on which the spindle driving gear is mounted, are high-quality ball bearings. The crank clutch takes hold instantly and releases quickly at any point in the crank circuit.



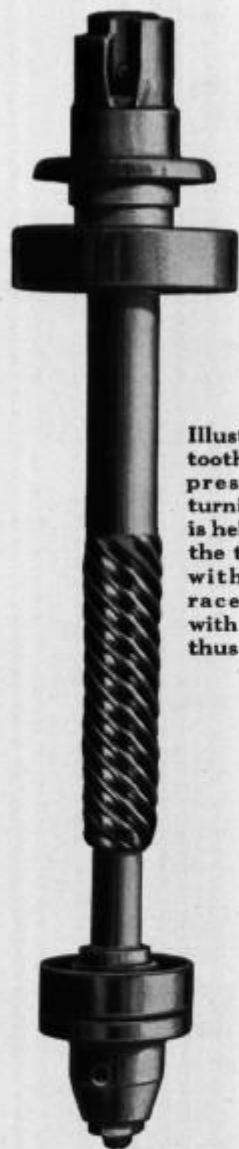
Illust. 4— Stainless steel bowl showing: A, bowl nut; B, bowl shell; C, upper dividing disc; D, center disc; E, milk distributor; F, rubber ring; G, tubular shaft.



"S" Series Cream Separators



"S" Series Cream Separators



Illust. 1—The 8-tooth spindle reduces pressure for easy turning. The spindle is held in position at the top and bottom with ball-bearing races which turn with the spindle and thus prevent wear.

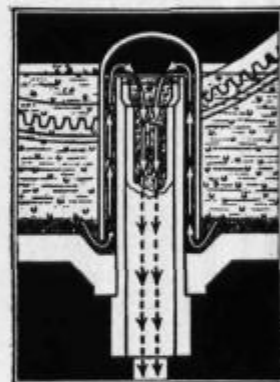


Illust. 2—The upper neck bearing assembly. (A) indicates the upper spindle ball bearing; (B) flexible double spring; (C) bearing housing (part of main frame); (D) housing cover.



Illust. 3—The main driving gear, which through its pinion turns the spindle driving gear, is enclosed as a safety feature and to allow it to turn in a spray of oil.

Illust. 4 — Sectional view of the oil overflow tube. The arrows show the path of old oil, from the bottom of the reservoir, as it is forced out between the overflow tube and cap to the drip cup underneath, when fresh oil is added. This self-cleaning and purifying feature also provides for the removal of condensed water as well as old oil.



Illust. 5 — Cream separator oil is an especially prepared, light-bodied, high-grade lubricant for separators and milker vacuum pumps.

Illust. 6 — A combination oil-sight and filler cap is a convenience for adding new oil and to indicate the oil level. While the separator is in motion, there is sufficient oil to provide ample lubrication as long as oil sprays against the filler cap. ➔

Separator Oil



Stainless Steel Single and Double Milker Units



Illust. 1—The single-unit milker with alternating action showing 50-pound seamless, stainless steel pail and teat cups with cushion-top inflations.



Illust. 2—The double-unit milker with alternating action showing 70-pound seamless, stainless steel pail and teat cups with cushion-top inflations.

The stainless steel milker was designed and built to assure dairy farmers of fast thorough milking of all types of udders in a safe manner with the most sanitary method. Not merely one feature but every detail of this milker is designed for easy cleaning. The milker unit consists of milker head, pulsator and teat cups assembly, including necessary connecting hose, etc. Milker pails are supplied separately as shown in the table of specifications. Special features for goat milkers are available on order.

All metal parts with which the milk comes in contact are made of stainless steel, sanitary and easy to clean. The one-piece pails, milker head, sanitary claw, and beadless teat cup shells, are all made of stainless steel. The efficient, no-oil, non-spring pulsator is lightweight design and constant in action under all climatic conditions. The long-lived, piston-type vacuum pump furnishes more vacuum on a given amount of power than any other milker.

Designed for Fast Milking

Dependable Pulsator with Plastic Slide Valve Plates

Teat Cup Cluster Has Uniform Distribution of Weight

Easy to Put On and Take Off

Easy to Clean

Milker Unit Specifications and Equipment

	Net Weight (Approx.)
Single Unit Complete, less pail.....	17 lb.
Double Unit Complete, less pail.....	22 lb.
Stainless Steel Pail (50-lb. capacity).....	12 lb.
Stainless Steel Pail (70-lb. capacity).....	18 lb.
Pail Protective Cover (special)	
Stanchion Hose for Milker Units.....	6-ft. regular, 4½-ft. and 8-ft. special
	{ 1-in. diameter with cushion top (regular)
	{ ¾-in. diameter with cushion top (special)
	{ 1½-in. diameter with plain top (special)
	{ 1¼-in. diameter with plain top (special)
Teat Cup Shells for Milker Units.....	14-oz regular, 10-oz. special. Either size fits all inflations
Special claw is available to adapt milker for use in milking goats.	



INTERNATIONAL HARVESTER



Stainless Steel Single and Double Milker Units

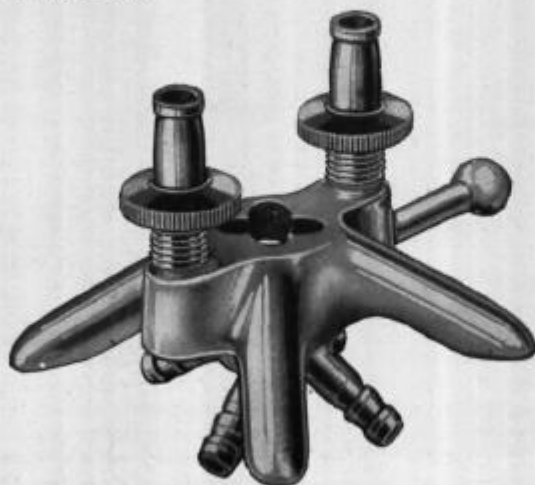
(Milker Unit Features)



Illust. 1—Pulsator for the single unit milker. This is a simple vacuum motor designed and built to maintain accurate speed and even pulsations for safe, fast milking. No lubrication is necessary as dependable valve action is provided through the use of new plastic valve plates.



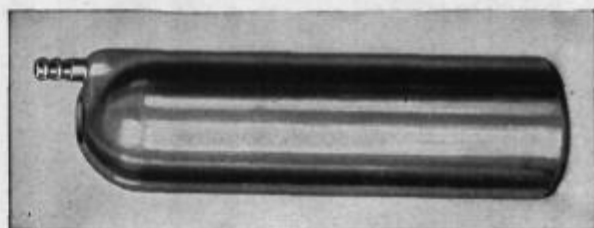
Illust. 2—The milker pail is drawn from one piece of stainless steel. There are no welded seams where milk particles can lodge. The non-rusting properties of the stainless steel remain intact so that the lustrous, platinum-like finish continues during a lifetime of use.



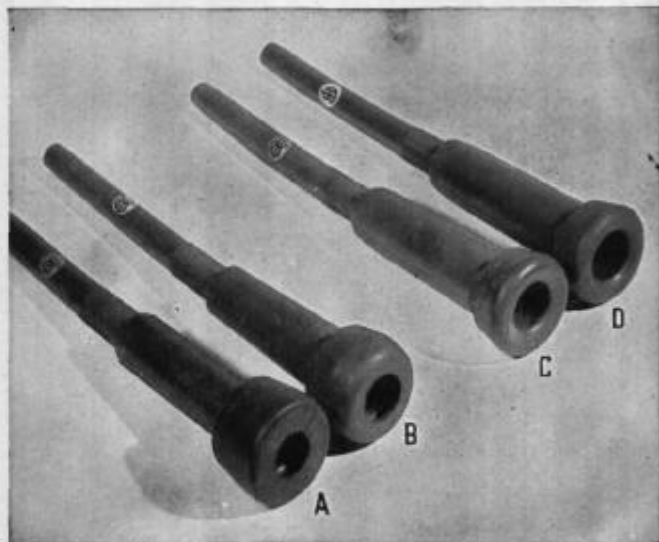
Illust. 3—The stainless steel claw with straight-through design is approved by sanitary authorities.



Illust. 4—Stainless steel milker head for the single unit. The high position of the check valve at the top of the pulsator socket positively assures that condensation of moisture from the stanchion hose cannot get into the milker.



Illust. 5—The standard 14-ounce stainless steel teat cup regularly supplied. A 10-ounce cup, similar in appearance, is supplied on special order.



Illust. 6—Soft cushion-top inflations are furnished as regular equipment but plain-top inflations are available on special order. (A), indicates the $\frac{7}{8}$ -inch cushion-top inflation; (B), 1-inch cushion-top inflation; (C), $1\frac{1}{8}$ -inch plain-top inflation; (D), $1\frac{1}{2}$ -inch plain-top inflation.

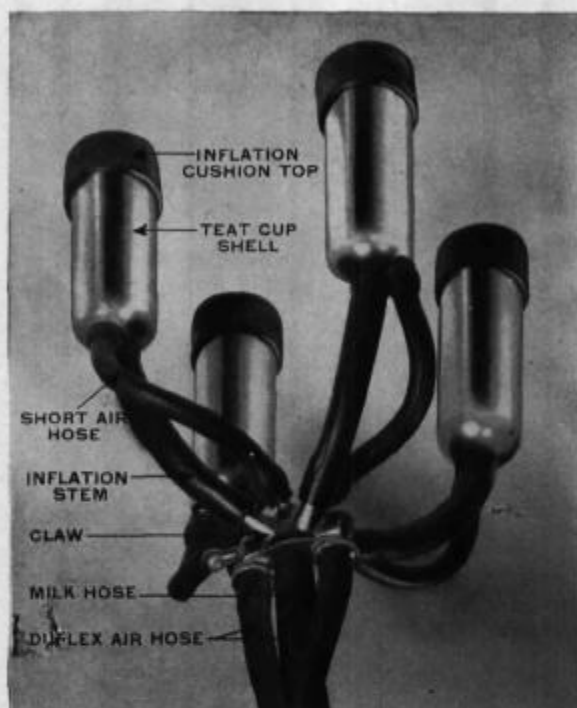


INTERNATIONAL HARVESTER



Stainless Steel Single and Double Milker Units

(Features and Accessories)



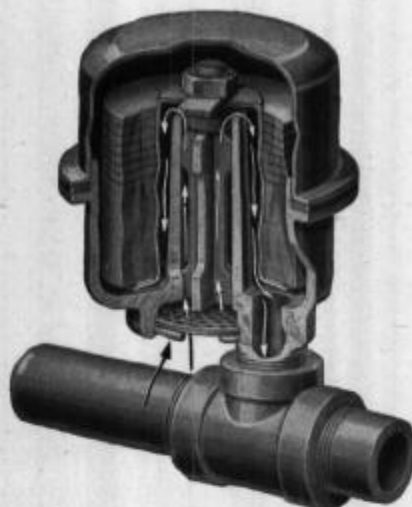
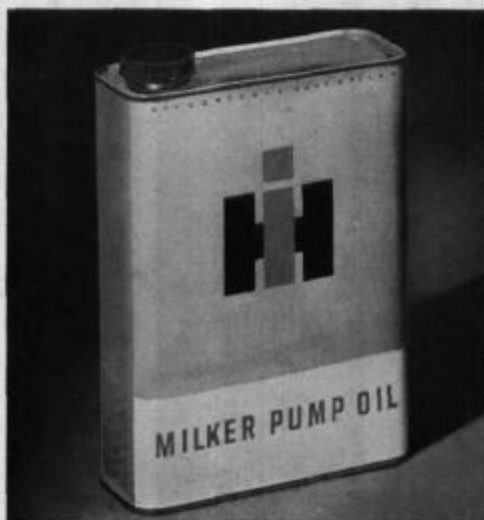
Illust. 1—Teat cup cluster with cushion-top inflations which are regularly supplied for alternating action milker.

Uniform-Pull Teat Cups

The design of the teat cup cluster makes possible a uniform distribution of weight, or pull, on all four quarters of the udder. This is especially desirable where the quarters are not all on the same level. A greater percentage of cows, taking into consideration all types of udders and shapes of teats, can be satisfactorily milked with this milker than with any other.

Close fitting, cushion-top inflations hold the teat cups securely, yet comfortably, to the teats.

Illust. 2—A specially refined, light bodied lubricant that is highly recommended for use in milker vacuum pumps.



Illust. 3—Cross section of the vacuum regulator valve showing how a constant vacuum is kept in the line by allowing air to enter when the desired vacuum is reached.

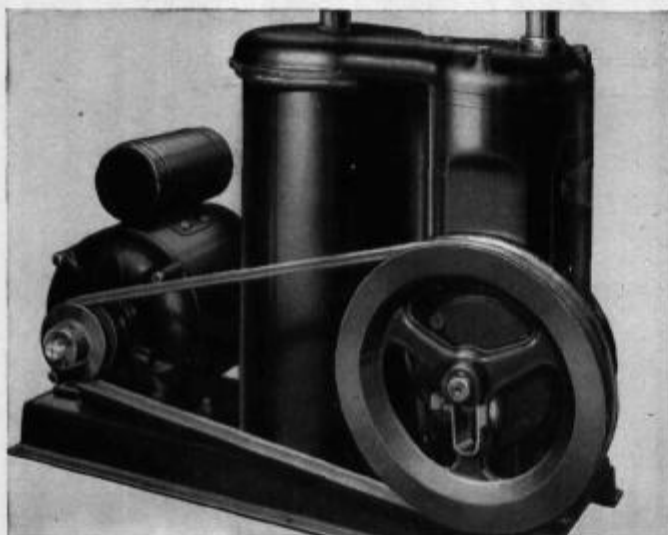
Milks From 13 Inches of Vacuum

The milker operates best if 12 to 13 inches of vacuum is applied to the cow's teats. An arrangement of weights used in the vacuum regulator, or relief valve, makes it possible to milk with the lowest amount of vacuum best suited to the requirements of the herd. The large weight maintains a vacuum of 10 inches. Additional small weights are supplied so that the operator can maintain any vacuum desired up to 14 inches.



Illust. 4—A convenient solution rack and jar can be supplied, on special order, for sterilizing the milker between milkings. The teat cups and hose are hung on the rack and filled with an approved sterilizing solution from the jar. Milker pails are sterilized and inverted on open racks—the wide mouth of the pails providing ready circulation of air.

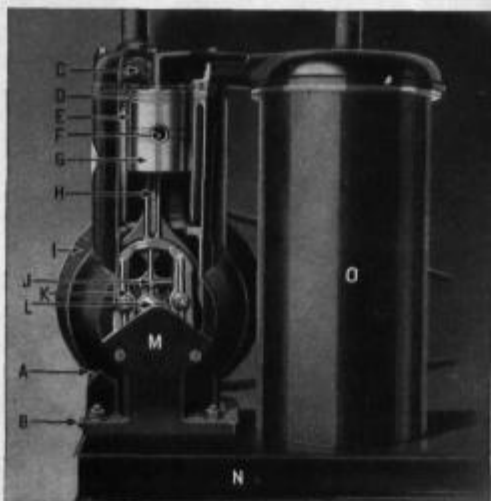
Milker Vacuum Pumps



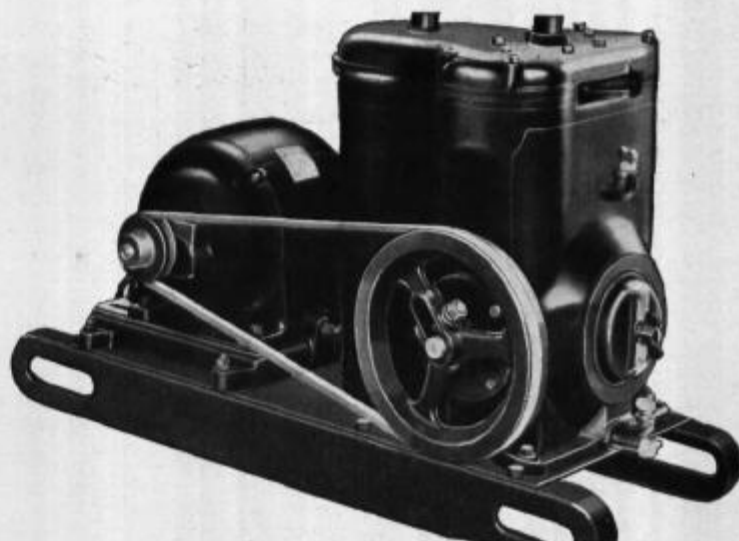
Illust. 1—Simple cylinder vacuum pump with motor. The single-cylinder unit is available in two sizes (see Specifications on next page).

Simple, Piston-Type Pumps

Because the piston-type pump operates at lower speed than other types, less heat is developed and consequently there is less wear. There are only three moving parts—the drive shaft, connecting rod and piston. All operate in a bath of oil. The piston is counter-balanced by means of counterweights bolted to each side of the drive shaft eccentric. This prevents vibration and assures a quiet, smooth-running pump. Removable sleeve and piston permit economical replacement when worn.



Illust. 2—Cross-sectional view of the single-cylinder vacuum pump. (A) Oil filler plug, (B) oil drain, (C) steel wool to prevent loss of oil at air outlet, (D) piston rings, (E) removable cylinder sleeve, (F) piston pin, (G) piston, (H) connecting rod, (I) V-belt pulley, (J) eccentric on drive shaft, (K) counterweight, (L) drive shaft, (M) bearing plate, (N) steel base, (O) vacuum tank.



Illust. 3—The motor driven, double-cylinder vacuum pump is designed for herds numbering 40 to 100 head. A 1 h.p. electric motor with this pump will provide sufficient vacuum to operate as many as 4 double or 8 single-unit milkers.

- Large Reserve Capacity.
- Low Power Requirements.
- Compact, Self-Contained Unit.
- Simple, Piston-Type Pump.
- Electric or Engine Power.



Illust. 4—Where electric power is not available the type LB engine (1½ to 2½ h.p.) will supply adequate power. The auxiliary water hopper, as shown, is available on special order. This engine used with the single-cylinder pump (2½-in. stroke) will operate 2 double or 4 single-unit milkers. When used with the double-cylinder pump, 4 double or 8 single units can be used with maximum efficiency.





Specifications

Milker Vacuum Pumps

	Electric Motor Specifications					V-Pulley		V-Belt	Vacuum Pump		No. of Double Units	No. of Single Units	For Approximate No. of Cows in Herd	Width	Height	Length	Shipping Weight, Lb.
	Volts	Elec. Current	Cycles	Watts Approx.	Motor R.P.M.	Diam.	Bore	Outside Cir.	Pulley Diam.	Approx. R.P.M.							
Single-Cylinder Pump (Stationary) Bore, 4½-in.—Stroke, 1¾-in.																	
1¼-hp. motor with vacuum pump	115-230	A.C.	60	350	1725	3⅜	⅝	58	10½	500	1½	3	Up to 20	13	20	29	190
1½-hp. motor with vacuum pump	32	D.C.	.....	365	1725	3⅜	⅝	58	10½	500	1½	3	Up to 20	13	20	29	196
1⅝-hp. motor with vacuum pump	115-230	A.C.	25	350	1425	3⅜	⅝	58	10½	440	1½	3	Up to 20	13	20	29	190
Single-Cylinder Pump (Stationary) Bore, 4½-in.—Stroke, 2⅝-in.																	
1½-hp. motor with vacuum pump	115-230	A.C.	60	540	1725	3⅜	¾	56	10½	500	2	4	15 to 40	15	21	29	216
1⅝-hp. motor with vacuum pump	115-230	A.C.	50	540	1425	3⅜	¾	56	10½	440	2	4	15 to 40	16	21	29	222
1⅝-hp. motor with vacuum pump	115-230	A.C.	25	540	1425	3⅜	¾	56	10½	440	2	4	15 to 40	16	21	29	226
1⅝-hp. motor with vacuum pump	32	D.C.	.....	530	1725	3⅜	¾	56	10½	500	2	4	15 to 40	16	21	29	222
1½-hp. motor with vacuum pump	115	D.C.	.....	530	1725	3⅜	¾	56	10½	500	2	4	15 to 40	16	21	29	222
1⅝-hp. motor with vacuum pump	230	D.C.	.....	530	1725	3⅜	¾	56	10½	500	2	4	15 to 40	16	21	29	222
*Vacuum pump to attach on 1½ to 2½-hp. engine.....																	
Double-Cylinder Pump (Stationary) Bore, 4½-in.—Stroke, 2⅝-in.																	
1-hp. motor with vacuum pump..	115-230	A.C.	60	980	1725	3⅜	¾	58	10½	500	4	8	40 to 100	16	23	41	314
1-hp. motor with vacuum pump..	115-230	A.C.	50	980	1425	3⅜	¾	58	10½	440	4	8	40 to 100	16	23	41	314
1-hp. motor with vacuum pump..	115-230	A.C.	25	980	1425	3⅜	¾	58	10½	440	4	8	40 to 100	17	23	41	340
1-hp. motor with vacuum pump..	115	D.C.	.....	1150	1725	3⅜	¾	58	10½	500	4	8	40 to 100	16	23	41	314
1-hp. motor with vacuum pump..	230	D.C.	.....	1150	1725	3⅜	¾	58	10½	500	4	8	40 to 100	16	23	41	314
*Vacuum pump to attach on 1½ to 2½-hp. engine.....																	

*Includes V-belt and V-belt pulley for engine. Vacuum pump unit is available less engine and with engine.

Regular Vacuum Pump Equipment

For single-cylinder stationary vacuum pump unit — one vacuum gauge, one vacuum regulator, and six stall cocks.

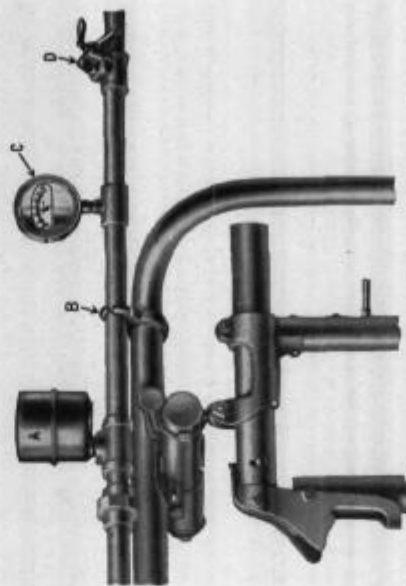
For double-cylinder stationary vacuum pump unit — one vacuum gauge, two vacuum regulators, and twelve stall cocks.

Extra Vacuum Pump Equipment

Only for 1 1/2 to 2 1/2-hp. engine-operated vacuum pumps: Auxiliary hopper attachments for 1 1/2 to 2 1/2-hp. engine. Parts for changing single-cylinder engine drive to 1/2-hp. electric unit.

V-belts for driving any of the vacuum pumps with outside circumference as follows: 56, 58, 60, 62, and 70 inches; and with inside circumference of 93, 105, 120, 136, 158, and 180 inches.

Note: When it is desired to operate one of the three sizes of stationary vacuum pumps with an odd-cycle electric motor or line shaft the 10 1/2-in. V-belt pulley or 10-in. flat pulley can be used. The 10 1/2-in. V-belt pulley used on the 1 1/2 to 2 1/2-hp. engine will also fit the 3 to 5-hp. engine. The vacuum pump units either with or without accessories are supplied less motor as well as with motor.



Illustr. 1 — The vacuum regulator (A) prevents excessive vacuum. Pipe clamps (B) are supplied on special order. The gauge (C) is factory-tested and accurately shows amount of vacuum. Six anti-freeze stall cocks (D) are supplied as regular equipment for single-cylinder vacuum pumps on pipe-line installations.



REFRIGERATION

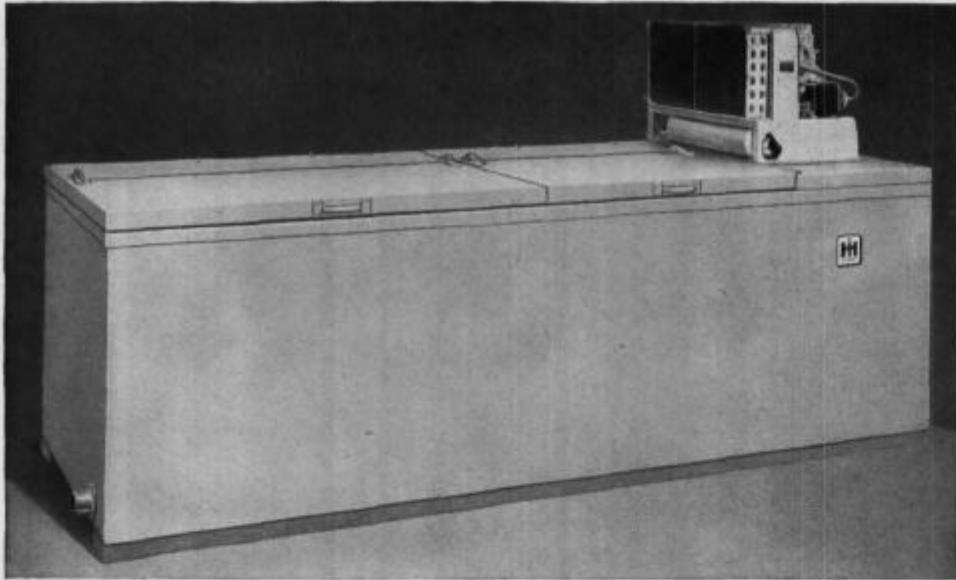
Section 19

Milk Coolers:	<i>Page</i>
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Condensing Units:	
$\frac{1}{2}$, $\frac{3}{4}$, and 1-hp.	477
$\frac{1}{4}$ and $\frac{1}{3}$ hp.	478

— • —



Milk Coolers



Illust. 1 — The electric-operated 12-can milk cooler provides big cooling capacity for the requirements of large dairy farms.

International Harvester milk coolers are complete assembled units designed especially for quick cooling of milk in cans. They are the only coolers to use pneumatic water agitation in connection with a built-up ice bank. This feature assures that each machine will cool its full rated capacity of milk below 50°F. in an hour or less, twice every 24 hours.

The cooler box, compressor unit, coils, rack, and entire mechanism are all designed to work in coordination with one another for maximum efficiency. Each cooler is fully tested before it leaves the factory.

A Size of Cooler for Every Dairy Herd

These milk coolers are built in 2, 3, 4, 6, 8, 10, and 12-can sizes. (See Specification tables next page.) The 2, 3, and 4-can "in-line" type are particularly adapted to narrow space requirements.

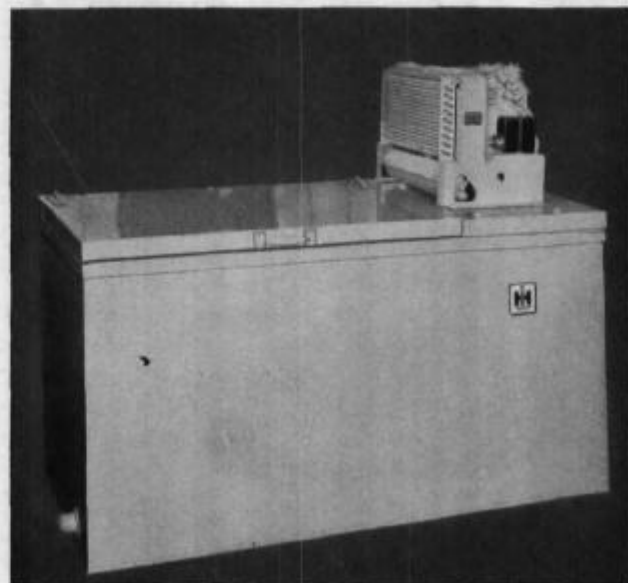
Electric or Engine-Drive

All sizes can be supplied as electric-driven units or for engine drive.

Quick Cooling for Low Bacteria Count

Because the milk is cooled so quickly, bacteria do not have a chance to grow and multiply in milk held in an International Harvester milk cooler. These coolers will cool their full-rated capacity of milk to 50°F. or less within an hour, utilizing the built-up ice bank and pneumatic water agitator for quick cooling. The temperature thereafter continues to decrease until it reaches approximately 33°F. During this latter period the ice bank is again built up so that it will be ready for quick-cooling the following milking.

- **Built-Up Ice Bank —**
Stored-up refrigeration for quick-cooling.
- **Pneumatic Agitator —**
Keeps ice-cold water circulating around cans for uniform cooling.
- **Two-Cylinder Compressor —**
High pumping efficiency. Electric or engine-drive.
- **Heavily Insulated —**
3-inch approved insulation between walls. No heat "boulevards" to allow cold to escape.



Illust. 2 — The 3-can milk cooler is particularly adapted for use by dairymen with small herds.



Milk Coolers

Specifications

*Holding Capacity of Milk Cooler in 10-Gal. Cans	Driven By	Compressor		R.P.M.	Counter-Shaft R.P.M.	Btu.** Pumping Per Hour 95° F. Room	Approx. Weight of Ice Bank, Lb.	IH Motor			Motor Line Fuses Amp. Rating	
		Bore In.	Stroke In.					H.P.	Full Load Amp. Rating		110 Volts	220 Volts
									110 Volts	220 Volts		
2L	Motor	1 ¹ / ₁₆	1 ¹ / ₁₆	365	.....	1450	110	¹ / ₄	4.0	2.1	15	15
2L	Engine	1 ¹ / ₁₆	1 ¹ / ₁₆	520	1585	2200	110	.....	.....	.....	.....	.....
3L	Motor	1 ¹ / ₁₆	1 ¹ / ₁₆	440	.....	1750	140	¹ / ₂	5.1	2.55	15	15
3L	Engine	1 ¹ / ₁₆	1 ¹ / ₁₆	560	1711	2425	140	.....	.....	.....	.....	.....
4L	Motor	1 ¹ / ₁₆	1 ¹ / ₁₆	460	.....	1850	175	¹ / ₂	5.1	2.55	15	15
4L	Engine	1 ¹ / ₁₆	1 ¹ / ₁₆	650	1700	2825	175	.....	.....	.....	.....	.....
6	Motor	1 ¹ / ₈	2 ¹ / ₄	265	.....	2825	245	¹ / ₂	7.4	3.7	15	15
6	Engine	1 ¹ / ₈	2 ¹ / ₄	375	1600	4320	245	.....	.....	.....	.....	.....
8	Motor	1 ¹ / ₈	2 ¹ / ₄	335	.....	3775	320	³ / ₄	10.5	5.25	15	15
8	Engine	1 ¹ / ₈	2 ¹ / ₄	465	1600	5325	320	.....	.....	.....	.....	.....
10	Motor	2	2 ¹ / ₄	400	.....	4825	355	1	13.8	6.9	20	15
10	Engine	2	2 ¹ / ₄	500	1600	6225	355	.....	.....	.....	.....	.....
12	Motor	2	2 ¹ / ₄	420	.....	5100	375	1	13.8	6.9	20	15
12	Engine	2	2 ¹ / ₄	580	1600	7175	375	.....	.....	.....	.....	.....

* The letter "L" denotes milk coolers of in-line type. **Average capacity of cooler.

*Holding Capacity of Milk Cooler in 10-Gal. Cans	Driven By	Refrigerating Coil						Milk Cooler Cabinet Outside Dimensions			Height to Top of Condensing Unit	Approx. Water-Holding Capacity, Gal.	Approx. Shipping Weight, Lb.
		Tube Diam. In.	Turns in Coil	Height to Top of Freezing Coil, In.	Minimum Size Box to Accommodate Complete Evaporator			Length, In.	Width, In.	Height, In.			
					Width, In.	Length, In.	Height, In.						
2L	Motor	$\frac{7}{16}$	7	$10\frac{1}{2}$	$21\frac{1}{2}$	37	$25\frac{1}{2}$	$43\frac{3}{8}$	$28\frac{3}{8}$	35	$50\frac{1}{4}$	73	555
2L	Engine	$\frac{7}{16}$	7	$10\frac{1}{2}$	$21\frac{1}{2}$	37	$25\frac{1}{2}$	$43\frac{3}{8}$	$28\frac{3}{8}$	35	$50\frac{1}{4}$	$72\frac{3}{8}$	520
3L	Motor	$\frac{7}{16}$	7	$10\frac{1}{2}$	$21\frac{1}{2}$	$52\frac{1}{2}$	$25\frac{1}{2}$	$59\frac{3}{8}$	$28\frac{3}{8}$	35	$50\frac{1}{4}$	103	720
3L	Engine	$\frac{7}{16}$	7	$10\frac{1}{2}$	$21\frac{1}{2}$	$52\frac{1}{2}$	$25\frac{1}{2}$	$59\frac{3}{8}$	$28\frac{3}{8}$	35	$50\frac{1}{4}$	$102\frac{3}{8}$	685
4L	Motor	$\frac{7}{16}$	7	$10\frac{1}{2}$	$21\frac{1}{2}$	68	$25\frac{1}{2}$	$74\frac{3}{8}$	$28\frac{3}{8}$	35	$50\frac{1}{4}$	134	890
4L	Engine	$\frac{7}{16}$	7	$10\frac{1}{2}$	$21\frac{1}{2}$	68	$25\frac{1}{2}$	$74\frac{3}{8}$	$28\frac{3}{8}$	35	$50\frac{1}{4}$	$133\frac{3}{8}$	865
6	Motor	$\frac{1}{2}$	8	$12\frac{3}{4}$	$34\frac{1}{2}$	$52\frac{1}{2}$	$25\frac{1}{2}$	$59\frac{3}{8}$	$41\frac{1}{8}$	35	$52\frac{3}{8}$	165	995
6	Engine	$\frac{1}{2}$	8	$12\frac{3}{4}$	$34\frac{1}{2}$	$52\frac{1}{2}$	$25\frac{1}{2}$	$59\frac{3}{8}$	$41\frac{1}{8}$	35	$52\frac{3}{8}$	165	940
8	Motor	$\frac{9}{16}$	8	$12\frac{3}{4}$	$34\frac{1}{2}$	68	$25\frac{1}{2}$	$74\frac{3}{8}$	$41\frac{1}{8}$	35	$52\frac{3}{8}$	$213\frac{1}{4}$	1180
8	Engine	$\frac{9}{16}$	8	$12\frac{3}{4}$	$34\frac{1}{2}$	68	$25\frac{1}{2}$	$74\frac{3}{8}$	$41\frac{1}{8}$	35	$52\frac{3}{8}$	$213\frac{1}{4}$	1135
10	Motor	$\frac{9}{16}$	8	$12\frac{3}{4}$	$34\frac{1}{2}$	$83\frac{1}{2}$	$25\frac{1}{2}$	$90\frac{3}{8}$	$41\frac{1}{8}$	35	$52\frac{3}{8}$	262	1290
10	Engine	$\frac{9}{16}$	8	$12\frac{3}{4}$	$34\frac{1}{2}$	$83\frac{1}{2}$	$25\frac{1}{2}$	$90\frac{3}{8}$	$41\frac{1}{8}$	35	$52\frac{3}{8}$	262	1235
12	Motor	$\frac{9}{16}$	10	$12\frac{3}{4}$	$34\frac{1}{2}$	99	$25\frac{1}{2}$	$105\frac{1}{8}$	$41\frac{1}{8}$	35	$52\frac{3}{8}$	311	1450
12	Engine	$\frac{9}{16}$	10	$12\frac{3}{4}$	$34\frac{1}{2}$	99	$25\frac{1}{2}$	$105\frac{1}{8}$	$41\frac{1}{8}$	35	$52\frac{3}{8}$	311	1380

All specifications subject to change without notice.

Regular Equipment

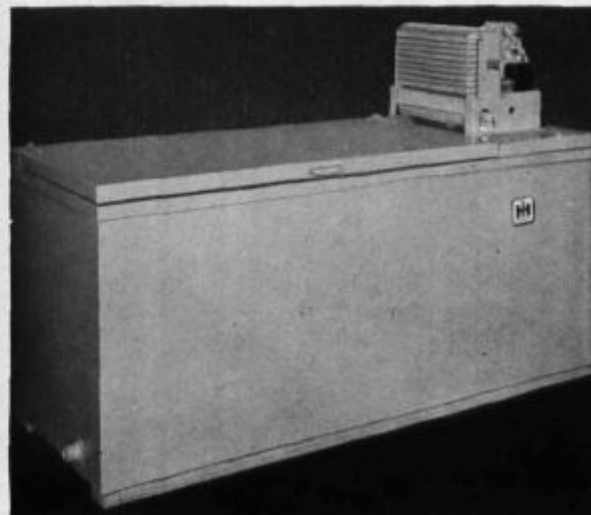
Motor for electric-driven coolers. (See Specification table above.) Engine-drive coolers come with engine attaching parts but less engine.

Special Equipment

Type LB (1 $\frac{1}{2}$ to 2 $\frac{1}{2}$ hp.) engine with special features for milk cooler operation. Parts to convert engine-driven cooler to electric-driven type. Coil and rack unit (as extra) — includes coil, rack, expansion valve, agitator hose, and tube — shipped either assembled or unassembled, as ordered.

Note: When above units are shipped assembled the coil is charged with refrigerant.

Electric motor air-cooled condensing units complete — (with or without agitator, as specified.) Engine-operated air-cooled condensing units complete with auxiliary agitator. Agitator heating attachments.



Illust. 1 — The 4-can "in-line" type milk cooler.



Milk Coolers

Built-Up Ice Bank

All International Harvester milk coolers employ the principle of a built-up ice bank for quick cooling of milk. This enables them to reduce the temperature of warm milk to 50°F. or less, within the first hour. During this initial cooling period, the ice bank is somewhat depleted but begins to build up again thereafter, while the milk is held in the cooler and brought to a temperature of approximately 33°F. By the time the next milking period arrives, the ice bank is fully built up and is ready to release stored-up refrigeration for quick-cooling the next load.

The ice bank, formed under water around the coils, is clear and free of air pockets, thus allowing the heat to move freely from the cans into the cooling coils. Laboratory tests show that the cooling efficiency of the ice bank is many times greater than if ice-cold water alone were used.

Pneumatic Agitator

Pneumatic water agitation, used in connection with the built-up ice bank, is an exclusive feature developed and perfected by International Harvester. The pneumatic agitator provides a forced circulation of water over the face of the ice bank and around the cans of milk. This forced circulation results in cooling milk more quickly and uniformly, and at lower operating cost.

The pneumatic agitator is essentially a water-sealed rotary air pump, built integral with the electric motor. Cold air from inside the cooler cabinet is drawn into the pump through a rubber hose, compressed, and then distributed through a second tube to vented pipes below



Illust. 2 — The 6-can cooler has a built-up ice bank of approximately 250 pounds which is made available for quick cooling by the pneumatic agitator. Note the control bulb frozen in the ice bank, which keeps it at the proper thickness. The scuff plates are divided so there are no heat "boulevards" between inner and outer tanks.

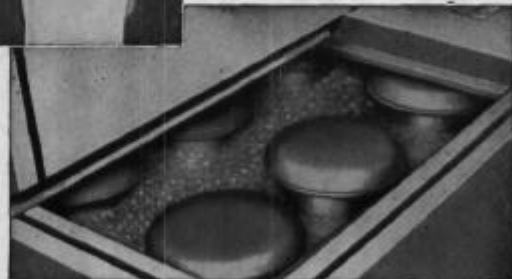
the ice bank. The agitator is put to work by simply pouring a small quantity of clean water in the filler hole, sealing the rotor. Once started, the agitator will continue to circulate the ice water inside the cabinet for approximately 1¼ hours, after which the action stops automatically.



Illust. 1 — Cross-section view of cooler box showing the pneumatic water agitating action. The continually rising bubbles of air, escaping from the vented agitator tubes, cause the water to pass over the face of the ice bank where it is thoroughly chilled before circulating all around the cans. Pneumatic agitation helps to assure uniform cooling at top and bottom of cans.



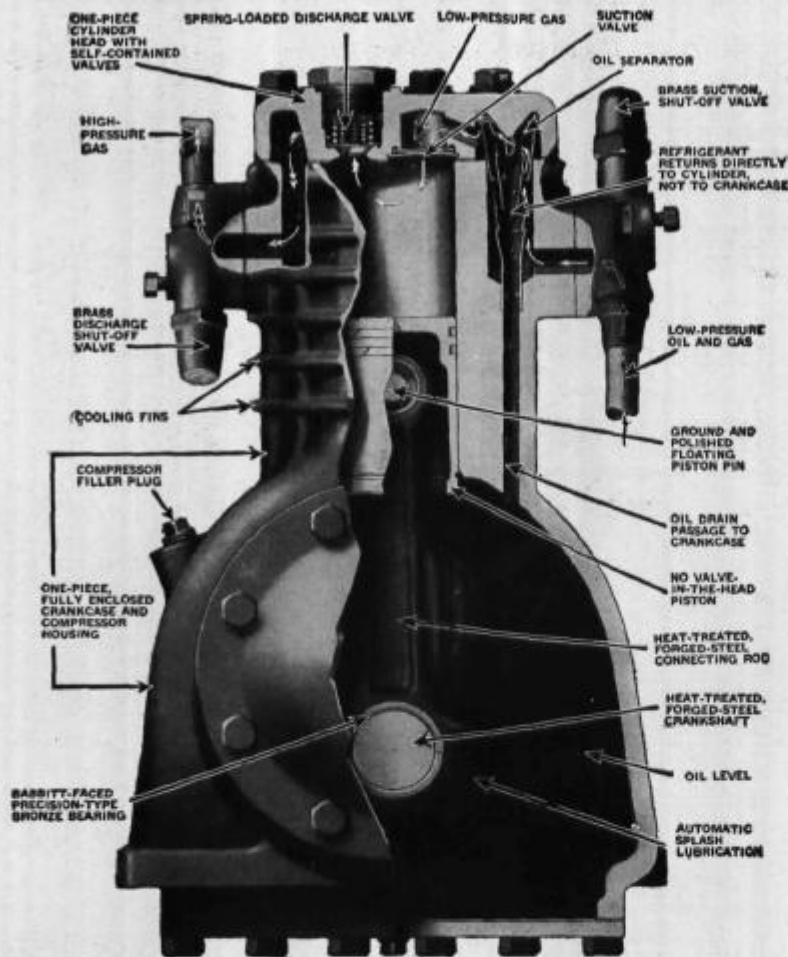
Illust. 3 — The pneumatic agitator is put to work by simply pouring a small quantity of water in at the top. Once started, it continues to operate for approximately 1¼ hours—long enough for the initial quick-cooling period.



Illust. 4 — Pneumatic agitation freshens and purifies the water in the cooler so that less frequent changing of water is required.



Milk Coolers



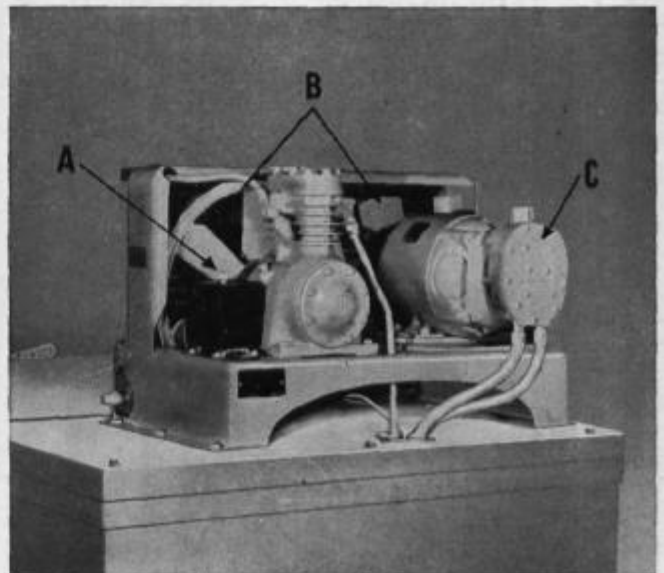
Illust. 1 — Cross-section view of compressor for International Harvester condensing units of $\frac{1}{2}$ -horsepower and larger capacities, showing refrigerant gas passages through the valves, the oil separator and return.

Smooth-Running Condensing Unit

The condensing unit consists of a 2-cylinder, balanced-design, automotive-type compressor operated by a heavy-duty electric motor (except where cooler is engine-driven): The pneumatic water agitator, large-capacity condenser with double-fan cooling, enclosed automatic temperature control, and scale trap are all regular features.

International Harvester condensing units are especially designed for farm use and can be quickly and economically serviced without removing the unit or without the use of special service tools.

Illust. 2 — The condensing unit is designed for maximum operating efficiency. The automatic temperature control is shown at (A). Two suction fans (B) cool the condenser. The exclusive pneumatic agitator (C) utilizes the power of the compressor motor.



Two-Cylinder Compressor

The two-cylinder compressor provides high pumping efficiency. All parts are accurately machined to close limits and must pass critical inspection to insure long wear and smooth transmission of power.

The crankcase and compressor housing is cast in one piece, assuring accurate positioning of crankshaft and piston bore.

Double-Fan Cooling

The 6-blade fan on the balanced flywheel of the compressor and the 4-blade fan on the motor pulley supply a continuous circulation of air through the structure for efficient cooling. The cylinder has large-area cooling ribs and the condensing unit is properly placed to assure free circulation of air at all times.

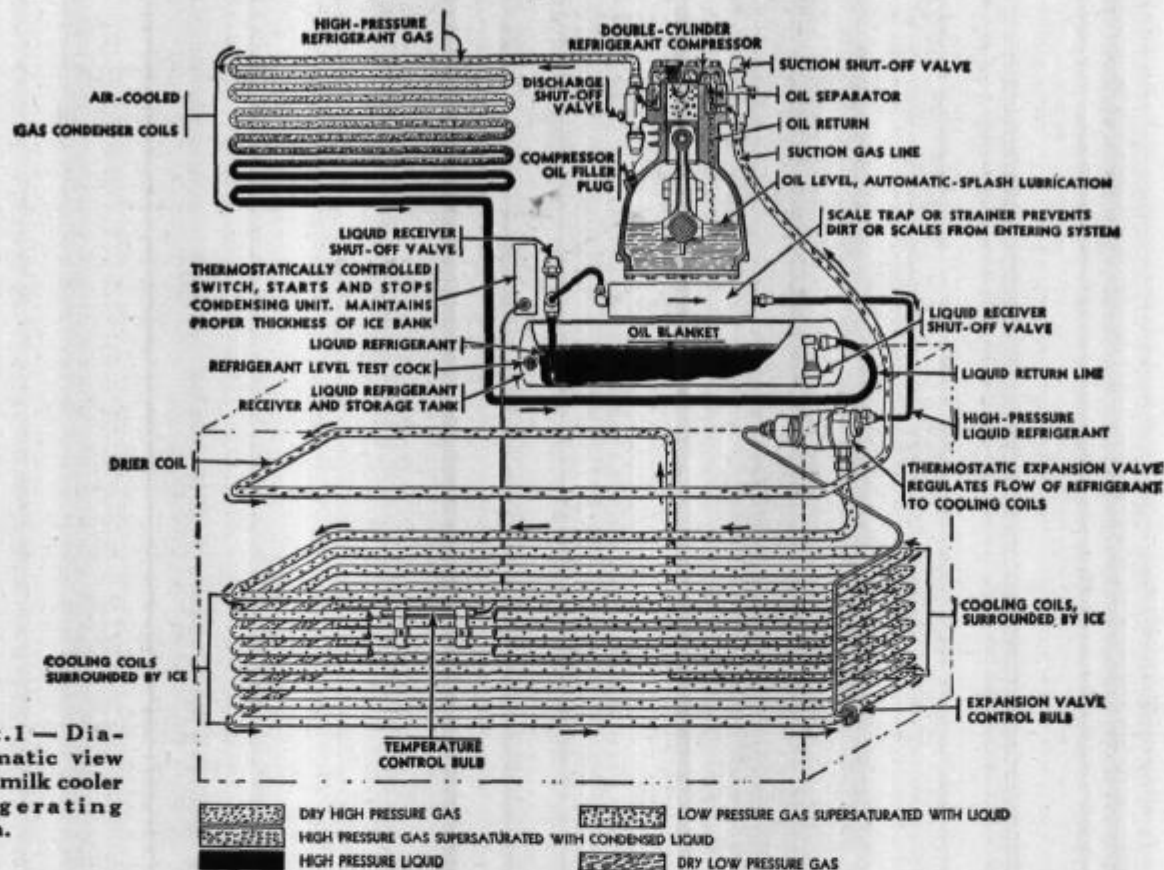
Efficient Lubrication

Each moving part and bearing is constantly lubricated with every turn of the crankshaft in the oil-filled crankcase. An oil separator keeps excess oil out of the refrigerant by returning it to the bottom of the crankcase. This assures plenty of oil where needed, also promotes faster cooling and thus reduces operating costs.



Milk Coolers

The Refrigeration System . . . How It Works



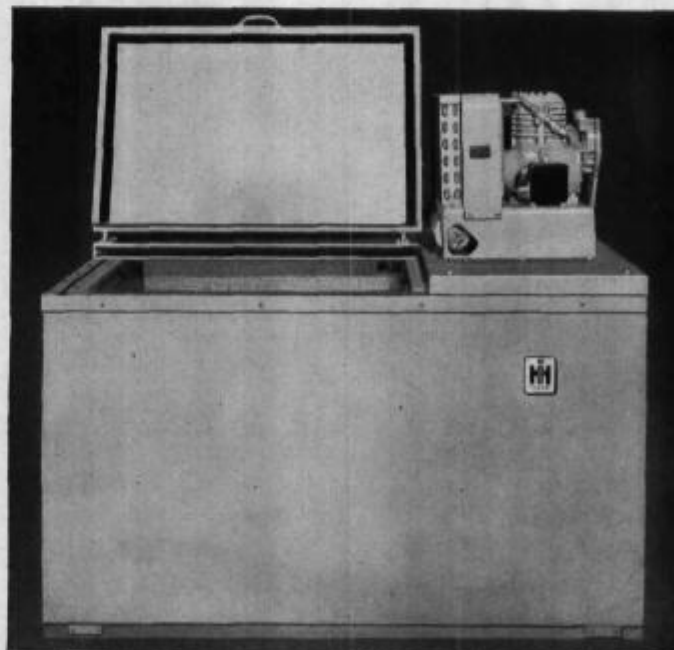
Illust. 1 — Diagrammatic view of the milk cooler refrigerating system.

Cooler Cabinet Well Insulated

Both the outside covering and inner tank are made of heavy (18-gauge) galvanized steel. Copper-bearing, rust-resisting steel is used to give added years of service where subjected constantly to water. The bottoms of both outer and inner tanks are double-seamed and solder-sweated. The outside corners are electrically welded, ground, and retinned, making them one piece. All milk coolers are painted with high-quality cream enamel.

No Heat "Boulevards"

Compressed between the tanks are three inches of high-quality approved insulation, which is coated on all sides by hot hydrolene, a cementing compound. This construction excludes all air and moisture from between the walls of the outer tank, insulation, and inner tank walls, converting the cooler into one solid box, leaving no empty spaces for heat leakage to develop. It also prevents condensation of moisture between metal and insulation, thus keeping the latter dry and 100 percent effective. The lid is likewise well insulated and, where it contacts the box, heat is kept out with double-insulating cover gaskets.

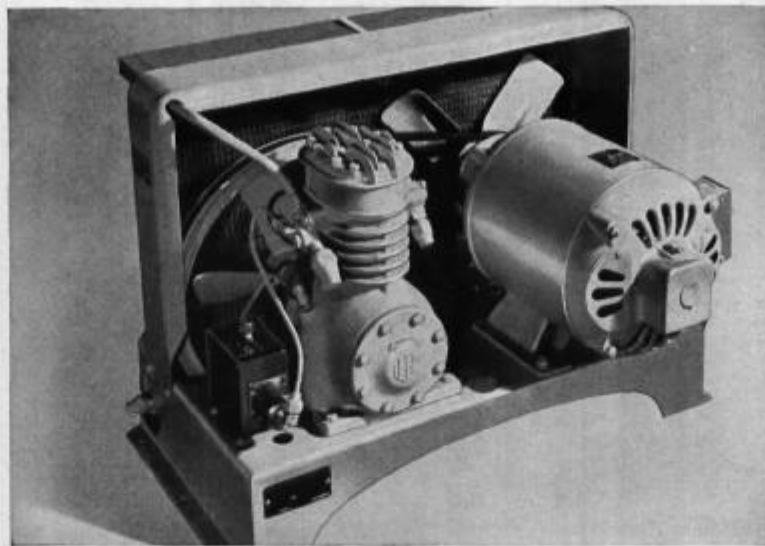


Illust. 2 — International Harvester 6-can milk cooler. All sizes are available with special features for engine operation.



Air-Cooled Condensing Units

(1/2, 3/4 and 1 H. P.)



Illust. 1 — The large size, 1 H.P., air-cooled condensing unit. All parts are accurately machined to close limits.

For Various Installations

International Harvester condensing units are quiet and smooth running with two-cylinder compressors having high pumping efficiency and long life. They are supplied either complete with agitator or less agitator for varied refrigeration applications. The capacity of the condensing unit, based on varying evaporator temperatures, is listed below. For most installations, con-

densing units should be selected for capacity based on maximum allowable running time of 14 to 18 hours each day. Operations for 20 to 22 hours is permissible for installations having heat loads of infrequent occurrence. A 6-blade fan on the balanced flywheel of the compressor and a 4-blade fan mounted on the motor pulley supply a continuous circulation of air through the condenser.

Specifications — 1/2, 3/4, and 1 H.P. Air-Cooled Condensing Units (Less Agitator)

Attachment Number.....	42112-C	42136-C	42113-C	42137-C	42114-C	42138-C
Size of Motor, H.P.....	1/2	1/2	3/4	3/4	1	1
High or Standard Application*.....	High	Std.	High	Std.	High	Std.
Number of Cylinders.....	2	2	2	2	2	2
Bore, Inches.....	1 1/8	1 1/8	1 3/8	1 1/8	2	2
Stroke, Inches.....	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4
Compressor, R.P.M.....	260	305	375	415	425	510
Piston Displacement, Cu. Ft./Hr.....	112.2	131.6	161.8	179.2	208.8	250.6
Motor Pulley Dia., Inches.....	2 3/4	3	3 3/8	4 1/8	4 1/4	5
Liquid Line—S.A.E. Flare.....	3/4	3/4	3/4	3/4	3/4	3/4
Suction Line—S.A.E. Flare.....	1/2	1/2	1/2	1/2	1/2	1/2
Refrigerant.....	CH ₂ Cl	CH ₂ Cl	CH ₂ Cl	CH ₂ Cl	CH ₂ Cl	CH ₂ Cl
Receiver Tank, Regular—Cap. Cu. Inches.....	191	191	191	191	191	191
Receiver Tank, Special—Cap. Cu. Inches.....	278	278	278	278	278	278
Refrigerant Charge, Regular—At Factory.....	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4	4 1/4
Refrigerant Charge, Special—At Factory.....	6	6	6	6	6	6
Length Overall, Inches.....	30 1/2	30 1/2	30 1/2	30 1/2	30 1/2	30 1/2
Width Overall, Inches.....	18 1/2	18 1/2	19 1/8	19 1/8	22	22
Height Overall, Inches.....	17 1/2	17 1/2	17 1/2	17 1/2	17 1/2	17 1/2

Evaporator Temperature BTU. Per Hour Capacities (90° Ambient)

+30.....	4,200	.....	5,780	.....	7,255	.....
+20.....	3,465	4,000	4,770	5,180	5,990	6,980
+10.....	2,750	3,170	3,780	4,100	4,755	5,535
0.....	2,100	2,420	2,880	3,120	3,625	4,220
-10.....	.....	1,750	.....	2,270	.....	3,060

*High Application—Evaporator Temperature not to Exceed 40°F. Standard Application—Evaporator Temperature not to Exceed 25°F.

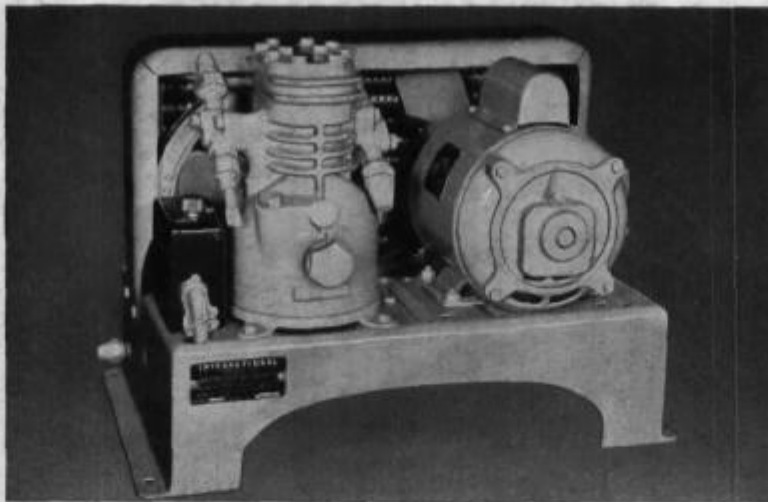


INTERNATIONAL HARVESTER



Air-Cooled Condensing Units

(1/4 and 1/3 H. P.)



Illust. 1 — View of the 1/4 hp. air-cooled condensing unit.

Specifications — 1/4 and 1/3 H.P. Condensing Units (Less Agitator)

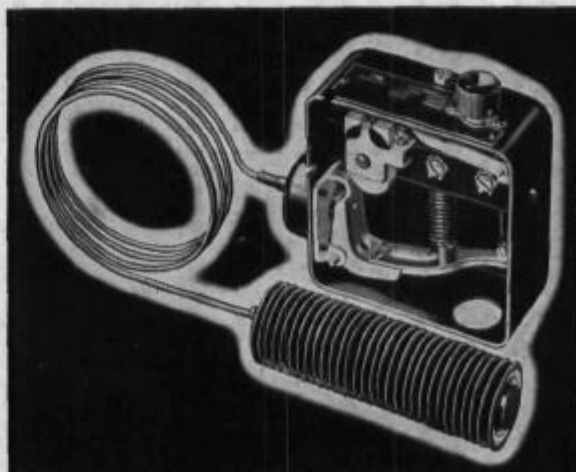
Attachment Number	42101-C	42134-C	42103-C	42135-C
Size of Motor, H.P.	1/4	1/4	1/3	1/3
High or Standard Application*	High	Std.	High	Std.
Number of Cylinders	2	2	2	2
Bore, Inches	1 1/16	1 1/16	1 1/16	1 1/16
Stroke, Inches	1 1/16	1 1/16	1 1/16	1 1/16
Compressor, R.P.M.	345	415	460	530
Piston Displacement, Cu. Ft./Hr.	55.9	67.2	74.5	85.9
Motor Pulley Dia., Inches	2 1/8	2 1/2	2 3/4	3 1/8
Liquid Line—S.A.E. Flare	1/4	1/4	1/4	1/4
Suction Line—S.A.E. Flare	3/8	3/8	3/8	3/8
Refrigerant	CH ₂ Cl	CH ₂ Cl	CH ₂ Cl	CH ₂ Cl
Receiver Tank, Regular— Cap. Cu. Inches	97.4	97.4	97.4	97.4
Receiver Tank, Special— Cap. Cu. Inches	154.8	154.8	154.8	154.8
Refrigerant Charge, Regular —at Factory	2 3/8	2 3/8	2 3/8	2 3/8
Refrigerant Charge, Special —At Factory	3 1/2	3 1/2	3 1/2	3 1/2
Length Overall, Inches	22 1/2	22 1/2	22 1/2	22 1/2
Width Overall, Inches	14	14	14 1/2	14 1/2
Height Overall, Inches	15 3/8	15 3/8	15 3/8	15 3/8

Evaporator Temperature BTU. Per Hour Capacities (90° Ambient)

+30	1,860		2,650	
+20	1,475	1,850	2,120	2,610
+10	1,125	1,430	1,660	2,070
0	870	1,130	1,320	1,675
-10		935		1,385

*High Application—Evaporator Temperature not to Exceed 40° F.
Standard Application—Evaporator Temperature not to Exceed 25° F.

- Smooth-Running 2-Cylinder Compressor with High Pumping Efficiency.
- Constant Lubrication of All Moving Parts with Every Turn of Crankshaft.
- Two Fans Supply Continuous Circulation of Air Through the Condenser.
- Meets Underwriters' Requirements.



Illust. 2 — Temperature control switch No. 42999-C with fin-type bulb for air or liquid immersion applications. Range from —5° to 40° F. Differential minimum 3°, maximum 8° F.



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